YOUR COMPUTER

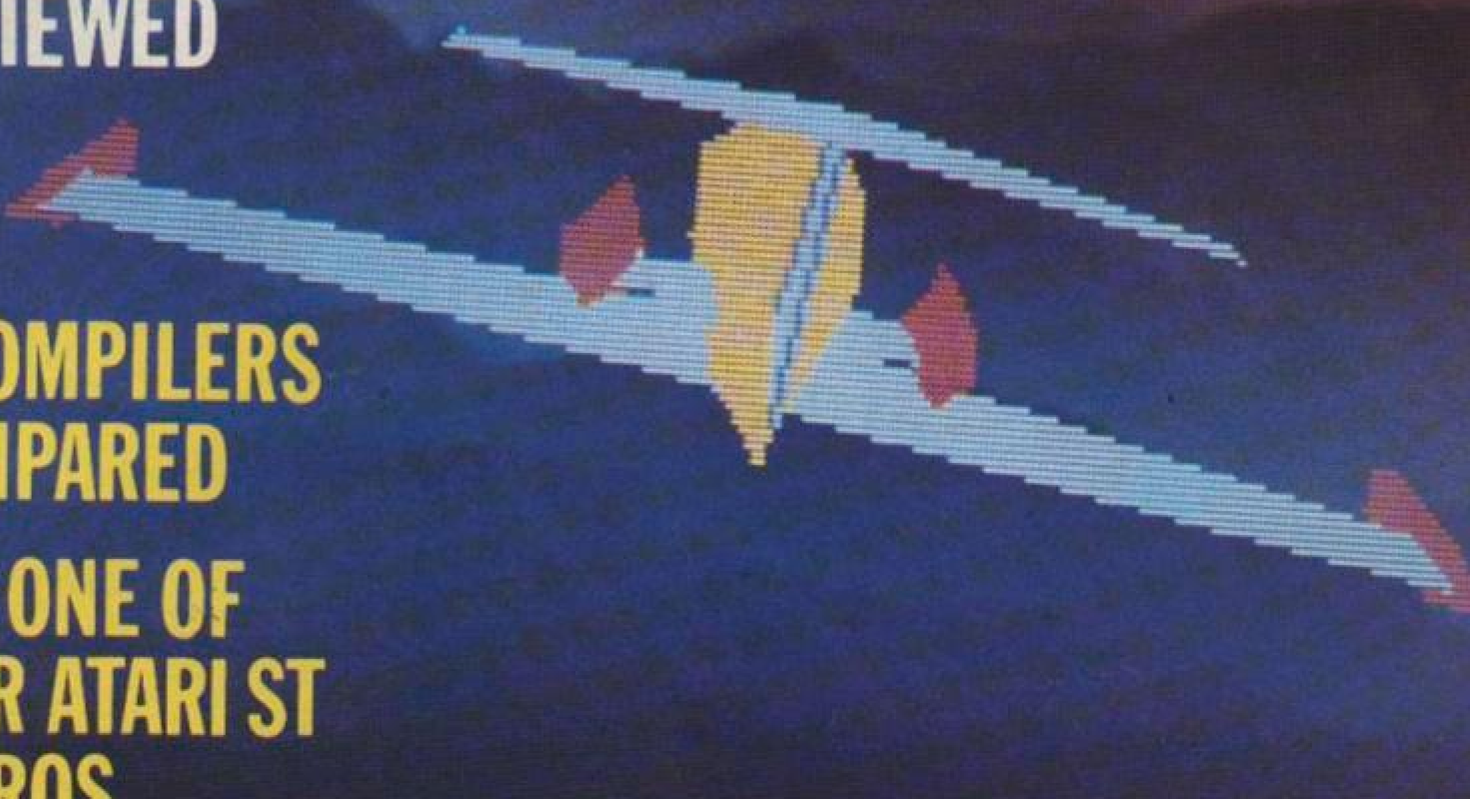
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contents

APRIL 1987

COMMENT

Welcome to this new-look issue of *Your Computer*. In coming months we will bring you articles on programming tools and techniques, and detailed evaluations of the latest developments in hardware and software. There is still plenty of time for fun and games, though, as our new adventure hints section proves. We hope you enjoy reading the magazine – if not, feel free to write to tell us why not.

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Back issues of the magazine from January 1986 onwards are available for £1.50 (U.K.), £3 (Overseas) from the Back Issues Department, 79-80 Petty France, London, SW1H 9ED.

news

WP rivals set for launch

Two new word processors for users of the ubiquitous IBM PC compatibles were recently launched in the same week. One is the product of evolutionary development, and the other is completely new.

Release 4.0 of *Wordstar Professional* has been awaited for some years now. In recent years its publisher, Micropro, has tried to move away from the traditional Wordstar design with products like *Wordstar 2000, Wordstar 1512* and *Easy*. The first two of these bore little resemblance to the classic Wordstar which most serious personal computer users have seen at some time. This caused some disappointment among established Wordstar users who wanted an upgraded version of what they already knew rather than a completely different package.

Many such users migrated towards Newstar's *NewWord 3*, which overcame many of the long-standing niggles of Old Original Wordstar but still maintained the same basic appearance and used most of the same operating commands. NewWord's success was something of a thorn in Micropro's side until the company took the creative step of buying the product and its publisher lock stock and barrel.

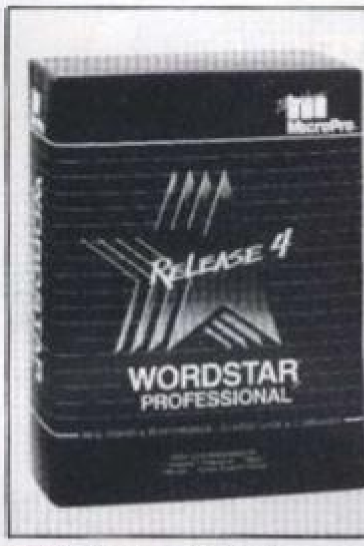
NewWord has now disappeared, but a preliminary look at WordStar Professional 4.0 indicates that many of NewWord's improvements have been integrated into the new release. The exact relationship between the two products can not be determined until Micropro makes review copies available, however.

The commercial importance of the classic Wordstar user interface is clear. Literally hundreds of thousands of Wordstar-trained computer users know the command sequences inside-out, so much so that many text editors supplied with utility and programming tools offer the Wordstar editing commands. Borland's *Sidekick* and HiSoft's *ED80* are examples.



● **Phillippe Kahn: branching out.**

New features which distinguish Wordstar 4.0 from version 3.4 include an "undo" feature, keystroke macros, a thesaurus, line and box drawing and arithmetical functions. The indexing utility, which was difficult and long-winded to use, has been replaced by a completely new program. Printer support is



● **Wordstar revitalised.**

greatly expanded, with proportional spacing and the use of different laser printer fonts now available.

Within days of the Micropro announcement, flamboyant software entrepreneur Phillipe Kahn announced Borland's latest product, *Sprint*.

Borland's reputation is for doing things differently. *Sidekick* and *Turbo Pascal* were products with no obvious rivals at the time of their launch, and the company now has an impressive range of programming and utility software, all of which has been well received. In launching a word processor, however, Borland is charting unknown waters. There are already more word processing alternatives than a PC user can comforftably shake a stick at, and as the lengthy histories of Wordstar, Multimate and Word Perfect show, word processing addicts are more conservative than the programmers who have accounted for most of Borland's sales up to now.

Nevertheless, some intriguing features are claimed for Sprint. Borland addresses the task of weaning potential buyers away from Word Perfect and Wordstar by including a chameleon-like ability to adopt alternative user interfaces. Sprint also has its own native user interface. Any of the three can be customised by the user, who may also add features through a macro programming language.

Existing text files from Wordstar or Word Perfect can be read directly into Sprint, and file conversion software is included to provide a degree of compatibility with other rivals. Borland's motto "Vive La Difference" certainly sounds appropriate.

Wordstar Professional 4.0 is due to go on sale as this issue of *Your Computer* hits the streets. The price is a substantial £399 plus VAT, including Mailmerge and Correctstar. Existing licenced users of Wordstar, Wordstar 2000 or NewWord 3 can upgrade for £99 plus VAT until the end of July.

Recovery builds at Commodore

Commodore International, the American parent of Commodore UK, seems to have completed a remarkable turnaround with the recently announced second quarter profits of $21.8 million, compared to a loss of $53.2 million in the same quarter last year.

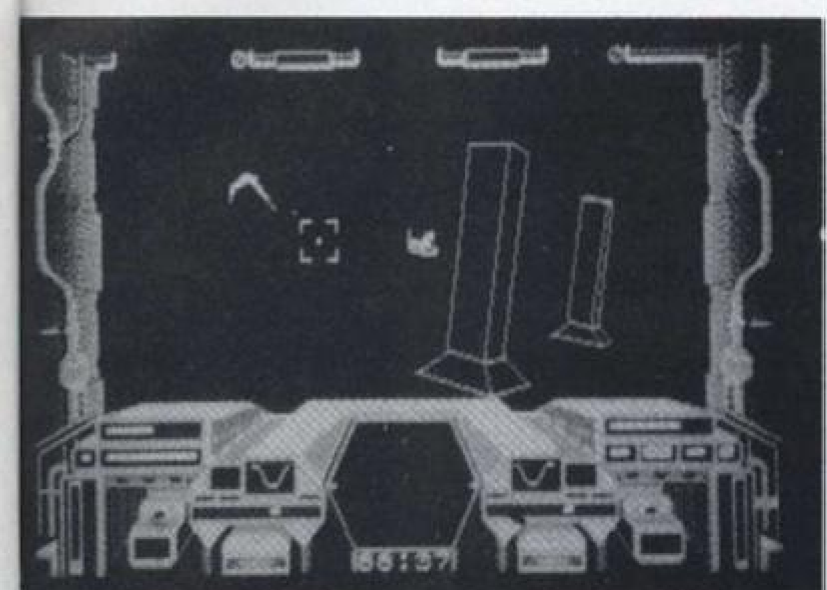
This recovery must in part be attributed to the success of the Amiga, which has only recently started to have a real impact on the US market. Whether Commodore UK will be as successful is open to question, especially as the Amiga marketing has not worked well, resulting in only very limited sales.

Another shock recently was the resignation, effective immediately, of Nick Bessey, one of the top men in Commodore Europe who has, according to rumour, moved to an IBM dealership in New Zealand.

Rainbird releases

Offices all over the country may well find productivity dropping off now that Rainbird Software's instant classic *Starglider* has been converted from its original Atari ST configuration to run on the IBM PC and the Amstrad PCW word processor.

Considering the fairly simple design of the IBM and Amstrad hardware it is remarkable how much has been achieved. The graphics remain stunningly smooth and the gameplay fast and furious. Sadly, both machines are handicapped by dismal little buzzers instead of proper sound facilities, so these versions lack the remarkable digitised speech and music of the original. The office joystick-twitcher was impressed despite this limitation, reporting that the IBM-compatible version seemed slightly easier than the original, but that wiping out the Starglider itself now took more missiles. The Amstrad PCW version? "Green but great" was the reply, although having to forsake mouse control in favour of the PCW keyboard was tricky at first. Owners of PC clones would do well to invest in a mouse before playing.



● **Starglider on the PC.**

Those lucky people rich enough to buy the wonderful but hitherto overpriced Commodore Amiga also have a version of Starglider in the works.

Although there are only a few Amiga owners rich enough to have the gall to describe it as a games machine, the imminent arrival of the new A500 (basically a A1000 at less than half the price) should install a whole new user base – much less averse to playing games. It is this group of gamesters who will appreciate the many late nights that Jeremy San has spent converting his Atari ST classic *Starglider* to run on the best 68000 based machine.

Mr San, a self-confessed Amiga lover, has managed to tame the blitter, and produce a game which is faster (although by how much is still a mystery), and has considerably better sound effects. It is without doubt the best game yet to be released on the all-American Amiga, something we Brits should be proud of, and should encourage our colonial cousins to produce more classics on this excellent machine.

For more details contact Rainbird Software on: 01-240 8838.

Shake! mixes audio with data

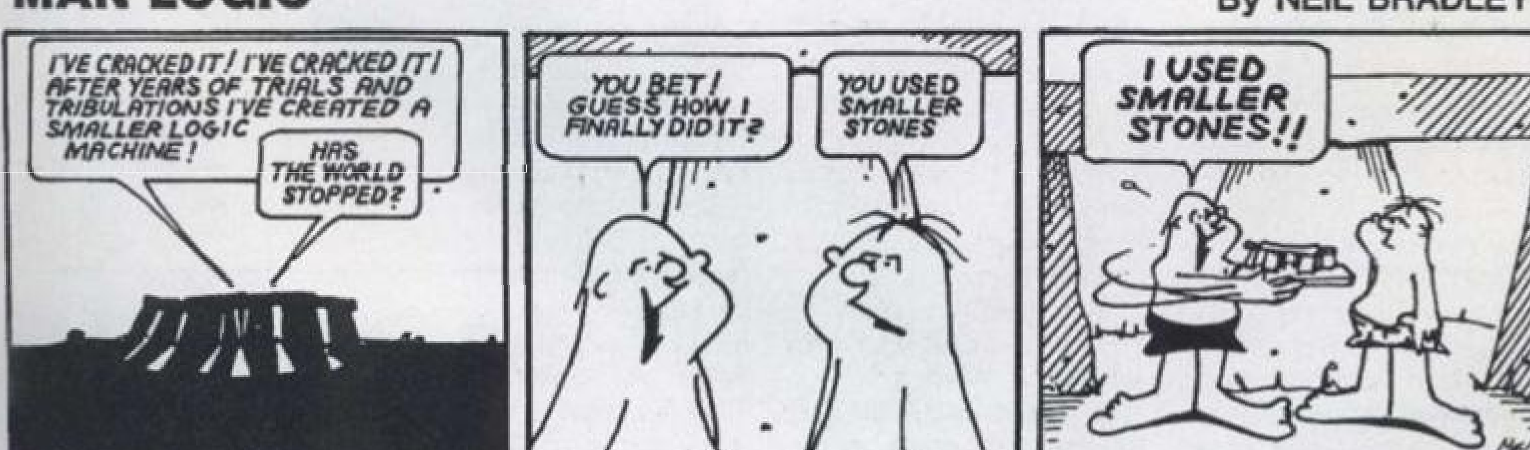
Keep Publishing Ltd, a new company based in Leicester, has recently launched a new magazine-on-a-tape, called *Shake!* Designed and compiled by a group of programmers, journalists and reviewers, it is both novel and great fun. They are not in competition with *Your Computer* however, as they are aiming their product at computer users who are particularly fond of pop music.

Initially, Shake! is available for the Spectrum 48/128 and +2, although Keep Publishing is currently looking at the possibility of producing versions for the Amstrad CPC range and the Commodore 64.

Perhaps the best feature of Shake! is its price at £1.49. With computer data on one side and various audio tracks on the other, Shake! makes magazines such as Smash Hits look expensive. As well as pop music, Shake! will also have features on fashion, films, and even computer games.

In a world full of huge publishing houses, and powerful software companies, it is great to see a small company with such a good idea begin to break through. If you are interested in obtaining a copy of Shake! send £2.00, to include postage and packing, to Keep Publishing Ltd, Epic House, Charles Street, Leicester LE1 3SH. It certainly looks like good value for money.

MAN LOGIC **By NEIL BRADLEY**





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letters

Obsolescence

I agree with your comments in the February issue about upgrading computers for the sake of it. Far too often glossy advertisements mislead us into believing that our existing systems are old-fashioned and out-dated. No-one mentions that systems being sold today are almost obsolete before they reach the shop counter; technology advances so fast that one development is superseded by another all the time. The manufacturers compromise as to when to issue a new model, hoping that the opposition will not produce one the next day.

In reality, the only portions of a computer system which have changed since the 1970's are clock speed, free RAM size, video resolution and disk storage space. These could have been provided years ago but the cost was prohibitive for the average user.

The problem with buying any computer is not its basic price but the price of the software. A full business system including database, spreadsheet, ledgers, payroll, word processor, communications, would leave very little change from £3,000. Yet to buy a system two years old with all of those would cost far less. There are added advantages; the program bugs have been resolved and they operate properly.

There are very few users who ever use all the facilities available to their full potential. My Tandy Model 1 is eight years old and has only 48K of memory, yet I have never written a program of that size. I doubt seriously if there are many people who would do so.

The purchase of a MS-DOS system to play games, for instance, is ridiculous. They are cheaper and play better on a Commodore or Sinclair. Why not look at what you have first? Can your existing system do what you want? If you decide to upgrade, look back at previous machines manufactured by the company you are considering. It is surprising how many were just dropped without any kind of back-up support.

Can you still get them repaired? Going for the greatest machine available may seem satisfactory now but what about next year when the company has gone to a new machine? What if a ROM blows and you cannot get a replacement? You throw the entire machine in the bin and buy the one you should have bought in the first place.

I must say that I bought my Tandy Model 1 in 1979 and I can still get it fixed if it goes down. There is still software on the market for it, some very cheap. I run almost every common computer language on it – spreadsheets, word processors and all. I do not entirely agree with the way it markets equipment but have to give the company some credit for the service.

Since 1979 a number of computers have come and gone; they were all supposed to be the best at the time. Where have all the obsolete computers gone? They are not all in the dustbin or reduced to components; people still use them today. We just do not hear about them so often. It is just too easy to be fooled into thinking that what you have is outdated; it may not be the case at all.

Norman Bailey, Bracebridge Heath, Lincs.

Help wanted

I am researching any projects using computers with severly handicapped people with the view to starting a project in East Sussex. The aim of the project at Brighton will be to investigate whether computers can be used as a tool to facilitate communication, possibly at a very low level, with mentally handicapped adults who would otherwise have no communication at the present time. In particular, I am interested in any programs geared towards adults rather than children and in your readers' experiences with the hardware they use.

Mark Tennent, Brighton.

Editor's reply: If anyone can help, please send information c/o Your Computer, 79-80 Petty France, London SW1H 9ED.

Oric drives

I write on behalf of our user group BDUG in the hope that you will be prepared to give to us some valuable space to try, to create an awareness among Oric computer owners of the existence of our user group and the DOS system which we have found to be second to none on the Oric range of micros.

Our BDUG organiser has now reached the point where he has tried all manner of ways or generating more interest in BDOS system to little avail, hence my plea for a last-ditch attempt to obtain some coverage.

The Byte Drive system was given a very good review in March 1984. On the strength of the review many Oric owners bought the system and, following problems I experienced with the supplier of the system, the coverage that I received culminated in the establishment of BDUG.

We have enjoyed a very fruitful association in the last year or so but we are now finding difficulty in maintaining support for the system. That is a pity in the light of developments in BDUG which have now made available complete systems at about half their original price – now £160 – and include the latest Oric Basic V2.0 and BDOS V4.0. There has been the intention of releasing BBC Basic and an OS to run Apple software, as, well as a range of peripheral devices – 80-col, ROM board, RAM disk, second processor and so on.

Stuart Wright, Clacton-on-Sea.

Future shock

In response to your editorial requesting readers' views I have been with you since 1981 and also buy four or five other computer magazines.

For two years my motive in buying *Your Computer* was because I was hungry for listings. It was through your pages that I learned how computing is an open-ended thing, limited only by imagination. Computing was first and foremost a hobby for me and its usefulness through things like the printer has only followed later. The computer was a concept machine; contributors with all types of personalities were able to express ideas by way of program listings.

I was therefore disappointed to read and see that you have abandoned the idea of program listings. Anyone entering computing now will not get the depth of experience and use of imagination, that exposure to the works of literally hundreds of other programmers brings. It was good schooling in the subject.

Times have changed, I know. The public as a whole now has slightly more insight into the wide scope of computing than a few years ago, so the fervour of discovering what they can do

Something to say about personal computing? Why not share it with other readers? Write to Reader's Letters, Your Computer, 79-80 Petty France, London SW1H 9ED. Letters may be edited for length.

has gone. What we now have are many people who use computers either at work, or have a home micro on which they play games or process words, without knowing anything about how a computer works.

This will be a continuing trend, because computers are being more useful as time passes, and are taken for granted as tools – ready-made, ready-programmed, and you do not need to get your brain dirty. The population is already fairly well seeded with amateur and freelance programmers but whether there will be enough programmers to fill the needs of the future is a difficult question.

I sympathise with you on the problems of printing ever-longer listings which are cripplers for the reader to key-in. I notice that you are to introduce serious articles on programming. That is obviously good and will help to sell the magazine. Although vast numbers of the old 8-bit machines were sold last Christmas, we should in the next two years see a major change over to the second wave, i.e., the 68000 machines. That opens a need for showing people how to program them but are you still sure about listings?

What *Your Computer* can do is to spearhead the progress of computing. I now but it because you publish articles on new and exciting technology, like compact disc storage, worm discs and occasional insights into the things we cannot have, like supercomputers and dedicated multi-megabyte graphics computers.

Could you do more on the *Tomorrow's World* side of things? I cannot understand why, when new discoveries are made, they take for ever and a day to reach the public. For example, why is there apparently complete apathy about RISC discoveries? I would love to have a computer with the fastest possible type of processor and to have a miniature CD drive with *Encyclopaedia Brittanica* in it, and wafer-scale memory on a scale undreamed of, able to hold all my software at once and access it as a RAMdisc.

I believe that *Your Computer* has started to develop a different niche for itself in writing about new developments, but please take it much further. You can whet appetites and stimulate demand for these things; industry will read your magazine, and others and see there is interest. We should be using this technology yet we have barely moved an inch since 1982.

What is happening in Japan? I do not suppose they are going to spill the beans until they have something practically at the marketable stage but was there not an AI fifth-generation project going on there? You have written next to nothing about that but you should have done, because when those doors open, the winds of change will start to blow, and much of British and American computer industry will be knocked flat!

P. S. Ershine,
Colchester.

Protest

I feel that I must write to protest about your omission to print the final part of Fantasmargorical saw your magazine for the first time early this month and because it had this listing for the Amstrad, I bought a copy. I then spent a few hours entering the listing and then spent my money on the February issue.

No doubt the program is a good one and the author is clever but why must some programmers use the small letter 'I' as a variable in listings which is made doubly worse when entered in condensed form? Why not use the small letter 'v'? Take 'MID$(a$,I,I)'. If you were a newcomer to programming would you know that the variable followed a$? What about 1=5 when two lines further on we get 'ink,I,I' or is it ink '1,1' or is it ink '1,I' or is it 'I,1'? So why not use another letter such as a 'v'? Surely 'FOR v=I to vx' would be far better?

Another point is that Amstrad machines have 20-, 40- and 80-column modes, so why make listings with 43 columns? All that is required in to tell the printer to 'PRINT #8, chr$(27); "a",chr$(40)'. If listings were made this way, it would be easier to see if a mistake had been made when entering listings, especially with data entries, because if the line ended with a certain letter or figure, so should the listing.

It may be that not everybody is able to afford a top-quality printer and that you enter a copy of a programmers' own listing in your magazine. I am glad that I got rid of my Spectrum Plus a long time ago because I think the quality of the Spectrum listings leaves much to be desired. Surely if a program is good enough for you to print and you have a tape or disk of the working version, it should not be too much trouble to make a listing on the better-quality printers you have?

J. Armfield,
Wigan, Lancs.

Editor's reply: We owe you an apology. Due not only to unforeseen circumstances but to a variety of production problems, the expected listing of Fantasmagorical could not be published correctly in the issue to which you refer. Rather than publish the program only to receive hundreds of calls and letters, we decided, wrongly it now seems, to hold the program and send it to anyone who requested it.

The points are all valid but it is impossible for us to alter readers' programs, so in future we will take more care about those we choose to publish.

HBBS 2 is back

Until the end of November, HBBS 2 Aberdeen was a slowly-growing bulletin board. Suddenly, disaster struck the small but perfectly-formed bulletin board in the form of excessive heat. It had a very adverse affect on this young board which had to go into hospital for some drastic repair work.

Now, due to absolutely no reason other than the abject boredom of the sysop, the board has returned, with one or two small changes and a few improvements.

The most noticeable change is that all the software for downloading has been changed so that it works. Also there is a small registration fee for anyone who is to become a serious and regular user. For normal use it costs £3 and if you want to try to find some useful information, the hacker's message board costs an extra £2.

If you want to give the board a call, it is open to any computer, even though it is run on a severely modified but now healthy BBC Model B. The number to call is 0224 632570 between 7pm and 10am any day of the week. The necessary settings for your computers are either 1200/75 or 300/300 baud rates with a byte setting of eight bits, no parity and one stop bit (8N1).

Graeme Findlay,
SYSOP HBBS 2, Aberdeen.

line noise

Epnitex prepares a rival to Prestel

It is not only in the telephone market that BT is losing its monopoly. For a long time the most popular online service for micro users and the great unwashed has been Prestel, but a rival is about to hit town, under the name of Epnitex.

Prestel may be pretty, but its simplicity can be frustrating. Telecom Gold is like most business computer systems – effective but dull and with a propensity for obscure commands.

Epnitex hopes to be different, and provide something in between. It uses viewdata graphics, but more dynamically. It can be accessed with standard Prestel-type software, but offers facilities like text editing and advanced graphics editing. It also offers businesses a unique opportunity to run their own viewdata systems under the umbrella of the Epnitex service.

The new system is an offspring of Timefame, which used to be an information provider (IP) on Prestel. The two parted company after a dispute over the areas which Timefame was allowed to cover.

For a while rumours circulated that the man running Timefame, Roy Norman, was going to take the database, lock, stock, and terminal, to the French Minitel service, which is currently trying to establish itself in this country. The rumours were wrong. The truth is much more ambitious and far more interesting.

The company has decided to set up a system from scratch, with some of the facilities they would like to have seen on Prestel.

The main users of Epnitex are likely to be large businesses for several good reasons.

First, closed user groups (CUGs) are easily and cheaply set up on the system. A company could put all its main dealers and distributors into a CUG and supply them with up to the minute information on product availability and prices. Response frames are also provided, so dealers and customers could order products over the system too.

The other attractive feature, particularly for that kind of use, is that the pages are all 'live'. That means the pages are being constantly updated, even as you read them. On Prestel, once you've put a page up on the screen, that's it. If the page changes – which, with something like share prices, it might be doing every few seconds – you have to ask for the page again, and probably pay another frame charge.

Those kind of features will make normal types of access more attractive to information providers. But there is one more facility on Epnitex which the company feels will be its major selling point.

This is EpniLink, which consists of local viewdata systems within the main one. EpniLink will be of interest to large companies who want to connect different offices or branches with a localised communications system.

The outlets are connected by special land lines to the head office, although the system as a whole runs as part of EpniLink. That means a branch could have confidential access to its head office and other branches, while still using the general facilities of Epnitex for information retrieval or communicating with other companies.

Electronic mail is going to be an important part of this type of system, and Epnitex has made sure that the mail facility is easy to use but sophisticated enough for the demands of business communications.

Once you are in the EpniMail frame there are several ways of entering text and graphics. Text can be typed in the normal way, but with the option to have word wrap. If you do use word wrap, and you have used graphics codes at the beginning of a line to get coloured text or background, these codes are automatically inserted at the start of the next line.

There is a text insert mode, as on a word processor, and you can use the full range of graphics for your messages.

Graphics codes can be set vertically or horizontally. You don't lose message space when you enter the codes, unlike in Prestel. The graphics characters can be edited – the two by three grid of pixels which make up a viewdata graphic character can be individually toggled on and off using the keys Q, W, A, S, Z and X. A quick look at your keyboard and that choice of letters will make sense.

There is a reply facility for incoming mail – Telecom Gold has that, but not Prestel. After reading a message, a simple command takes you to the mailbox frame with the name and address of your correspondent entered.



● **Epnitex looks like Prestel but offers more.**

icationews from Jill Phillips and Ian Burley

Another definite improvement over Prestel is the use of star commands. Certain pages and facilities can be accessed directly by typing a star followed by a character. Typing *I, for example, will take you straight to the main index. Okay, so hitting '0' on Prestel will usually take you back to a local index, but not always – it's annoyingly inconsistent.

Other star commands include *M to take you to the main mail section, *N to see how many messages you have waiting, *T for the telex facility and *Q which cycles you through the front pages of all the major IPs.

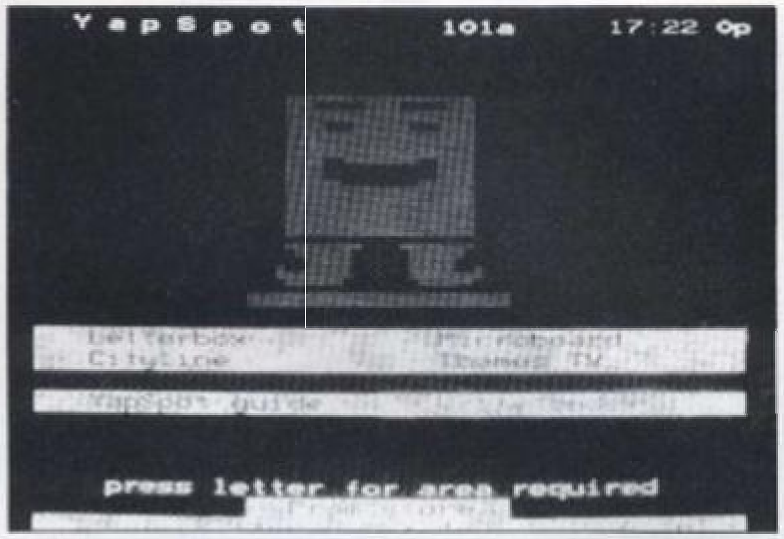
One other useful feature, which Prestel has just latched on to, albeit in a half-cocked way, is keyword searching. Type *F Wally and the system will take you straight to the page about Wally. If there is more than one page, the system puts together a menu for you to choose from.

The main index shows the business bias, and the fact that Epnitex has got its eye on the lucrative vertical markets. As well as the general mail facility, EpniMail, there is the EpniLink system for businesses. And under the Aspect heading we find sections called EpniCity, EpniFarm and EpniLaw.

However, it would be dangerous to ignore individual users, especially those with micros. Home computer users were the saving of Prestel. Micronet continues to be the most popular area on Prestel, and certainly showed the fastest growth.

So Epnitex also has a computing section. The title Computing Time isn't exactly inspired, and when I looked at the section there was very little in it. But it promises downloadable software and a bulletin board area as well as articles.

The system shows its



● **Yapspot, for people with lots to say.**

Timefame heritage in the section ingenuously named 'Yapspot'. This is a real-time chat area, like a live bulletin board, where message are posted almost immediately.

Timefame ran a service like this in the 818 database on Prestel, and claimed up to 1.5 million accesses a month. As well as hotly debating the meaning of life, you can also stick up free advertisements, and the system will be used for polling readers on the burning issues of the day.

The pricing structure is markedly different from other systems. At the very top, it will cost you £4000 a year to become an IP. That includes 200 pages, and there are no extra charges for closed user groups and dynamic frames.

Business users will pay £300 a year, which gives them round the clock access. Below that are several more levels which have restricted access times. Educational users pay £125, but can go on the system only after 1.00pm. Home users pay the same but can't log on until 6.00pm. Finally, students have the same hours as home users but only pay £75. However, they don't have access to the electronic mail facilities.

In addition to the annual subscription there are time charges. These are a little vague at the moment, but will probably be around the 2p a minute mark. However, each subscriber gets a certain amount of free time per day – home users, for example, get 10 minutes. This is to encourage people not to hog the system.

Not surprisingly, Epnilink comes a little more expensive. The base system costs £3000 a year, with an extra £1000 a year for each additional branch.

No date has been set for the launch. According to Roy Norman: 'We're ready to go now, technically. We've been held up a little by the BT strike, and we're waiting for Board of Trade registration. There are several large IPs who have expressed interest, and so we should be ready to go soon.'

Epnitex is very sophisticated, but there is one more thing the system needs if it is to be worthwhile – it needs to be *big*. That certainly applies to the email part. There's no point in being able to send mailboxes if there's no-one out there to receive them.

The system also needs to attract large *IPs, not only to* provide the information but also to provide enough revenue to keep the cost of the system down to a reasonable level.

Of course, there is still Prestel. In spite of their go-ahead, state of the art image, most micro and technology consumers are conservative at heart and tend to stick with the established viewdata systems.

In spite of all that, Epnitex is undoubtedly superior to Prestel as far as features and ease of use are concerned. With the bias towards business use it could well prove successful.

● ● ● ● ● ● ● ● ● ● ● ● ●

More TV hacking

Unauthorised access to the Irish equivalent of BT Gold, EirMail, was demonstrated on Irish television recently. A disguised guest on the television programme Zero, referred to only as "Greenbeard", apparently gained access to the Irish PSS network (EirPac) and then EirMail without using authorised accounts or Network User IDs (NUIs). Eyewitnesses then reported that Greenbeard proceeded to create new accounts on the EirMail system, as though he had System Manager level access. The Irish telephone company, Telecom Eirann, countered suggestions that their email service didn't have adequate security built into its system compared to others, by pointing out that EirMail is actually an Irish branch of BT Gold, and in fact uses identical equipment and software. The whole story is remarkably reminiscent of the 1984 Prestel "hack" which culminated in the conviction of Robert Schifreen and Steve Gold. Before Gold and Schifreen were arrested, a hidden person, subsequently identified as Robert Schifreen, demonstrated unauthorised access to the Prestel "Vampire" status computer on BBC TV's Micro Live programme.

line noise

Liquidation

Sci-Tek Ltd (Future Science and Technology), trading as Modem House – well known for its range of computer comms solutions and the Voyager range of modems, has gone into voluntary liquidation and it was revealed that the company owed around £250,000 at a recent creditors meeting.

Sci-Tek's outspoken MD, Keith Rose, was reported as being confident that most creditors would get paid, though there is confusion over one supplier, Kirk Automation, which claims a five figure sum is owed to them by Sci-Tek. To this, Keith Rose answered that repairs to returned Voyager modems (manufactured by Kirk) wiped out the debt. The Voyager range of modems has been dropped, but the Modem House name lives on in a new company run by Keith Rose, supported by a brand new range of modems. Further details concerning affairs of the old company can be obtained from chartered accountants Valentine & Co. Tel. 01-637 3656.

New name for Easylink

As of February 16th, the popular email service Easylink, will be renamed Mercury 7500 – a culmination of the effective take-over of the system by BT rivals, Mercury. Mercury 7500, which competes with BT's Telecom Gold, will not initially differ from its Easylink forebear but could herald a wide range of Mercury initiatives in the comms field later this year, including a nationwide local call access network.



Versatile comms package

PMS Communications of Birmingham has announced a comms package, Dial Up. Naturally the package is both viewdata and scrolling-text compatible and besides offering CET format viewdata telesoftware and XMODEM file transfer protocol handling, the up-and-coming KERMIT file transfer protocol is also catered for. Besides the BBC Micro, Dial Up is also available for RML Z series and Nimbus machines as well as IBM PC compatibles such as the Amstrad PC1512. Two versions of the package are available, for education and home users of the ubiquitous PC clones.

Extra numbers

The BT Gold database, Microlink, is now accessible to more of its users via local telephone call access rate as the result of a tie up with the consumer goods chain, Debenhams. Complementing local call access via PSS, the Debenhams network gives an extra 120 local access telephone numbers in 42 areas around the country. Disappointingly, users will still be charged PSS rates for using the Debenhams network – 2.5p per minute (300 baud) or 3p per minute (1200/75). At the time of writing, Prestel had not yet announced final tariffing for its own previously announced link-up with Gold, which will also give widespread local call access, via a Prestel gateway.

Hacker fined in PSS case

Freelance comms journalist from Wales, Paul Needs, has been successfully convicted of four charges of "theft of electricity" in relation to the misuse of a PSS account belonging to BT. Needs, who was originally arrested and charged back in Octrober '86, did not contest the charges and was fined £100 on each of the four counts against him, and he was also ordered to pay £130 worth of PSS account charges. Apparently one of the residing magistrates asked a BT solicitor whether password protection could be improved, to which the answer was "yes" ...



New communications software

Three companies have recently announced new comms packages for BBC Micros. BBC Soft is set to supply Modem Master, a disc based viewdata/ASCII scrolling text terminal which features a powerful viewdata editor and optional optimisation on Master Series BBC Micros. Modem Master looks like being one of the cheapest terminals around at just £12.95.

BeeBug has released the new Command ROM-based comms solution. Once again full viewdata and scrolling text terminals are featured, but Command's strength lies in its built-in service commands designed to make host terminal writing in either Basic or machine code as easy as possible. The £39.95 package is aimed directly at budding bulletin board sysops and is also supplied with the Beebug version of the Kirk Magic Modem.

FOR AS LITTLE AS £159 YOU CAN BE THE HOME SECRETARY.

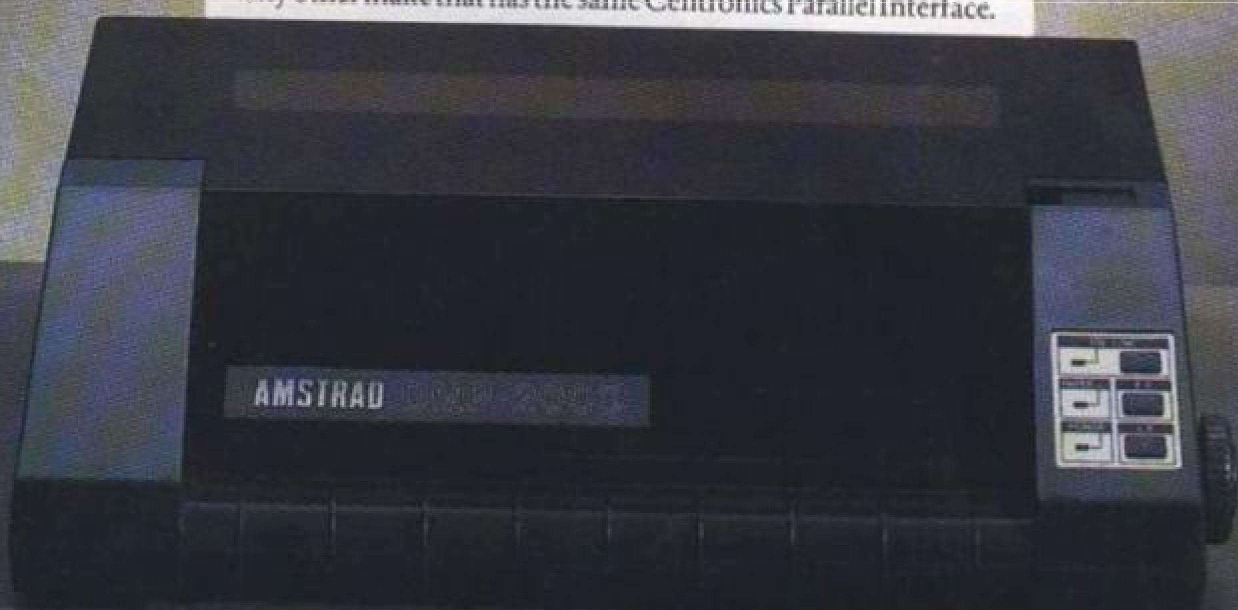
There's more to home computers than fun and games.
Just add a printer (and the necessary software) and your computer becomes a word processor. And you become a very efficient secretary.

If the printer you add is the Amstrad DMP 2000 your efficiency will even extend to saving quite a lot of money.

Because the DMP 2000 costs just £159 (incl. VAT).

Yet it will print draft quality text at an impressive 105 characters per second. And Near Letter Quality at 26 characters per second.

As you would expect it is compatible with all Amstrad home computers. But it is also compatible with Epson and any other make that has the same Centronics Parallel Interface.



If you've already graduated to a PC there's the Amstrad DMP 3000 printer.

It's compatible with all the Amstrad PC 1512's as well as Epson and all other IBM compatible PC's. It costs just £169 (plus VAT).

Both printers have easy front loading and both will take ordinary A4 paper. One of them is bound to be right for your particular home office.



Please send me further information on the DMP 2000 ☐ and DMP 3000 ☐ TC 4/87

Name__________

Company__________ Telephone__________

Address__________

DMP2000 AVAILABLE AT: ALLDERS · COMET · CURRYS · DIXONS · LASKYS · JOHN LEWIS
DMP3000 AVAILABLE AT: CPS · DIXONS · FIRST SOFTWARE · LASKYS · JOHN LEWIS · MBS · MICRO PERIPHERALS · NORBAIN · NORTHAMBER · OFFICE INTERNATIONAL · P&P · RYMANS · SANDHURST · VISTEC · WILDINGS AND GOOD INDEPENDENT COMPUTER STORES

AMSTRAD PRINTERS

Amstrad plc., PO Box 462, Brentwood, Essex CM14 4EF. Telephone: (0277) 230222.







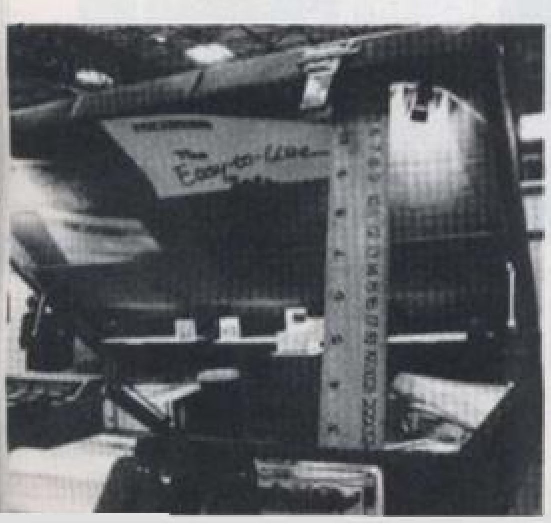
● Z88 uses plug-in EPROMs in Psion Organiser mould.

● The crowded show was more up-beat than in recent years.

PICK OF THE WHICH

The 1987 Which Computer Show revealed Sir Clive's new laptop portable in prototype form.

● Silly stand architecture was much in evidence.



Asked whether the 88 in his machine's title was the expected launch date, Sir Clive and the assembled crowd laughed, perhaps with a trace of unease. In many ways it summed up the main potential stumbling block of this promising machine. Indeed, if the quoted specification, software availability, and price, all turn out to be correct, and the machine is, as Sir Clive promises, available in April, then Cambridge Computer Ltd. will be on to a winner.

As usual, the Sinclair mind has come up with some incredible innovations, but again Sir Clive has gone against the flow and ignored the current trend for portable computers of MS-DOS and a 3½" disk drive. Priced at £199.95 exclusive of VAT, the machine was first shown at the Which Computer Show, although all involved took some trouble to explain that this was not the machine's official launch.

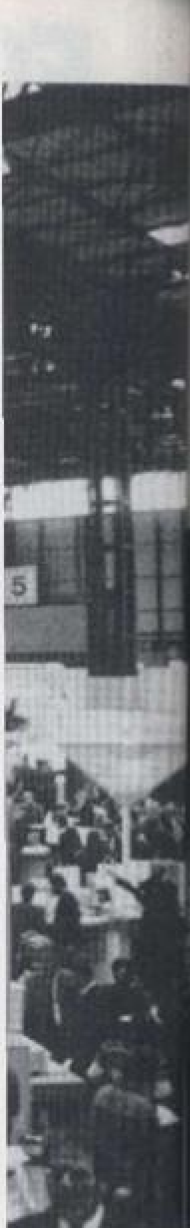
In a highly competitive market, the Z88 is a truly remarkable machine. Weighing less than 2lbs (considerably less than even the smallest competitors) and smaller than an A4 pad, the machine comes with an inbuilt suite of software (although this time not designed by Psion) and 32K of onboard RAM. It is a relief that there is no sign of microdrives, and instead the machine uses removable EPROMs for storage, with sizes varying from 32K to 1Mbyte.

The screen is an 80 character LCD eight lines deep which will apparently use 'supertwist' techniques (similar to those on the excellent Zenith Z181) to obtain excellent screen legibility. Also included in the package is a Z80 version of BBC Basic, with built in Z80 assembler. The machine is powered by four AA batteries which will, Sinclair claims, allow for 20 hours active use, or one year on stand-by. This sounds pretty remarkable as they only last three hours in the YC Walkman.

Initially the machine will only be available through mail order, although at this price we imagine the demand will force the machine into high street retailers. When *Your Computer* gets hold of a finished machine, we will immediately press it into everyday use. Will the keytops fall off when you turn the machine upside down? Will the batteries fizzle out? Has Sir Clive got it right this time? Watch this space for a full review later in the year.



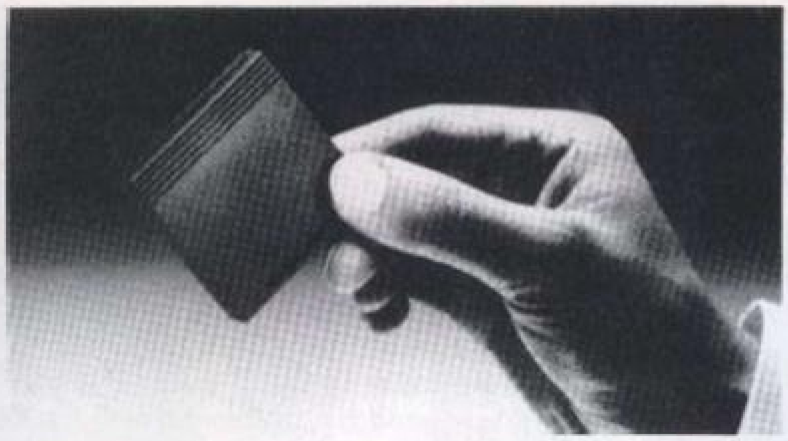
● Hi-res graphics c expensive workstati displays abounded



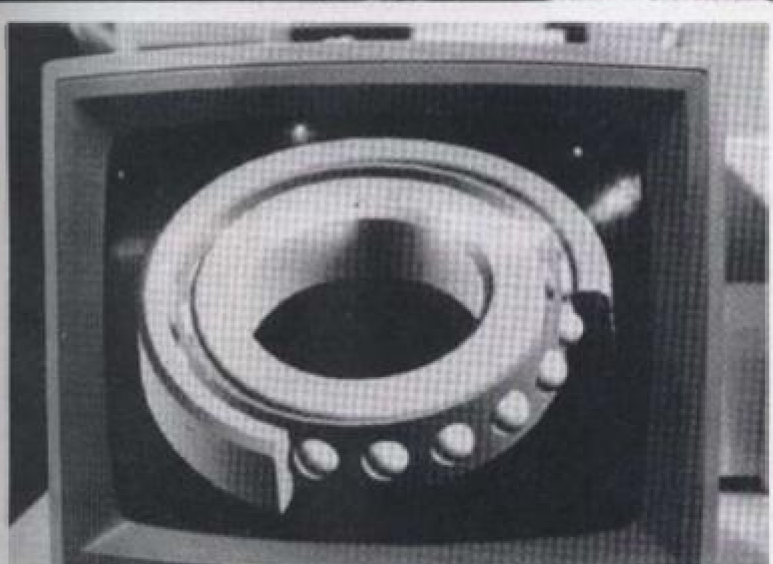
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● **Z88 uses plug-in EPROMs in Psion Organiser mould.**

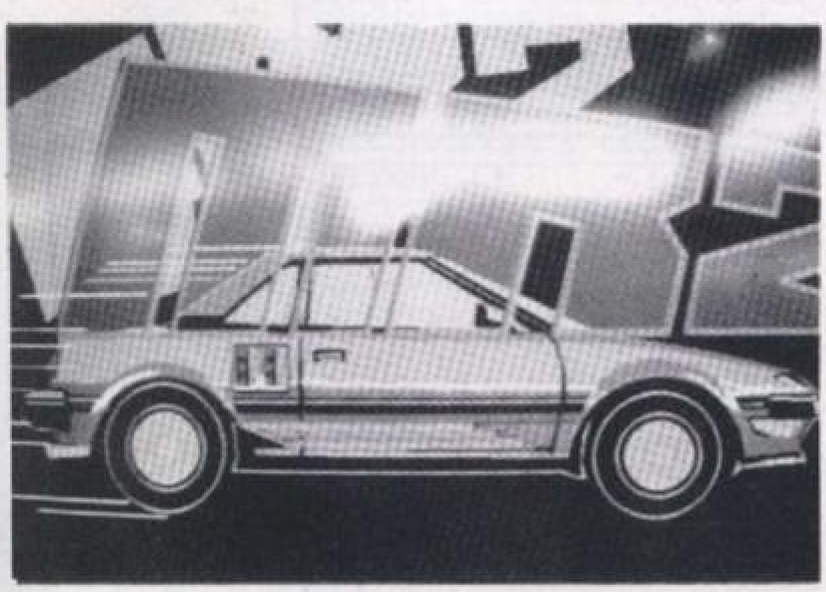






● **The Z88 itself is not the CP/M micro most observers expected.**

● **Hi-res graphics on expensive workstation displays abounded.**



Z88 Technical Background

The Z88 incorporates a four-chip design. These respectively are the CPU (Z80), ROM, RAM and a new gate array which provides the system hardware.

Price:
£199.95 exc VAT.

Dimensions:
11 1/2" x 8 1/4" x 7/8"
(293 x 209 x 23mm).

Weight:
1 lb 14 ozs.

CPU:
Z80 (CMOS).

ROM:
128K bytes (1 megabit) containing operating system and applications software together with Basic/ Assembler.

RAM:
32K expandable via 32K bytes, 128K bytes and 1 Mbyte cartridges to a maximum 3 Mbytes battery-backed from the computer.

EPROM:
Up to 3 Mbytes removeable storage capacity via 32K bytes, 128K bytes and 1 Mbyte cartridges.

Operating System:
Cambridge Computer ('C-DOS').

Language/Assembler:
BBC Basic.

Display:
8x80 character 'supertwist' LCD – dark blue on grey – with four windows: menu options, work area, machine status and new screen map.

Software:
Integrated on-board suite with spreadsheet, wordprocessing, database selection, diary calendar, calculator, real-time clock and alarm.

Power:
4 AA batteries providing 20 hours active computing or one-year standby; mains adaptor option.

Ports:
Three for cartridge expansion, RS232 for most popular printers.

Z80 Expansion Bus:
(providing future expansion options).

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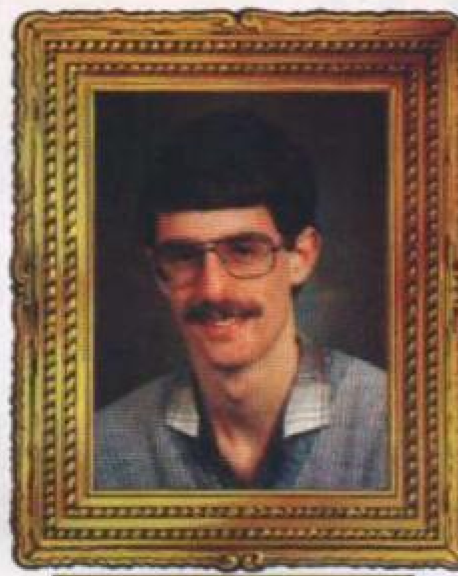
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???
Programmer of the Year 1987

Expected Royalty Payments **£50000.00+**



Tim Tyler
Programmer of the Year 1986

Royalty Payments to Date **£41217.15**



Peter Johnson
Programmer of the Year 1985

Royalty Payments to Date **£36593.46**

BBC Micro Software Top 10
January 12th 1987

1	Repton 3	Superior Software
2	Ravenskull	Superior Software
3	Stryker's Run	Superior Software
4	Micropower Magic	Micropower
5	Computer Hits 3	Beau Jolly
6	Winter Olympics	Tynesoft
7	Sentinel	Firebird
8	Commonwealth Games	Tynesoft
9	Karate Combat	Superior Software
10	Trivial Pursuit	Domark

Compiled by Gallup Chart Services (Reproduced by kind permission of Gallup)

Superior Software Ltd is unquestionably the leading software house for the BBC Micro and Electron — with chart-topping programs such as Repton, Thrust, Stryker's Run, Citadel, Ravenskull and SPEECH!

In addition, *Repton 3* and *SPEECH!* have also been successful releases for the Commodore and Amstrad computers.

Our authors have been successful too. Tim Tyler, a 17-year-old from Exeter, has so far earnt £41217.15 in royalties from sales of his *Repton* games; and Peter Johnson, the author of *Overdrive* and *Deathstar*, has now received £36593.46.

As part of our program of continued expansion, we are looking for top-class programmers of **all** home computers, including: Spectrum, Commodore 64/128, Amstrad 464/664/6128, Commodore 16/+4, Atari ST, Amstrad 1512 PC, Commodore Amiga, BBC Micro and Electron. We are also eager to contact games designers, graphics designers, and composers of computer music.

We have a string of major releases planned for 1987 including the new games: *By Fair Means Or Foul, Nautilus* and *Haunted House;* we require conversions of these games to be written for **all** major home computers.

If you would like to be part of our continuing success story, please tell us about yourself by filling in the coupon below and sending it to us. We will immediately send you a **free** copy of our booklet "Success in Software" which is packed with hints, tips and advice for computer programmers.

Alternatively, Superior's Managing Director Richard Hanson is always available to speak to accomplished programmers; you can phone him on 0532 459453.

WHY SHOULD YOU CHOOSE SUPERIOR SOFTWARE TO PUBLISH YOUR PROGRAMS?

- **Top Royalties Paid**

Our authors are usually paid on a royalty basis, receiving 80p for every cassette or disc sold. The royalties are calculated and sent out promptly every three months. For exceptional programs, we will also consider making a downpayment on the royalties or an outright cash payment.

"I went with Superior Software because I knew that their Managing Director, Richard Hanson had already achieved some acclaim as a games programmer himself. When they published my game Overdrive it was a great success, and I've now earnt far more money from that program than from any of the other 16 programs which I've had published." . . . Peter Johnson, author of Overdrive and Deathstar.

- **Individual Service and Advice**

We always give individual attention to our programmers and their work.

"When I approached Superior Software with an early version of Ravenskull, I received a great deal of help and advice on how to improve the game. I can quite definitely say that their prompt and decisive service transformed a mediocre game into a high quality arcade-adventure which subsequently topped the BBC and Electron charts." . . . Martin Edmondson, co-author of Ravenskull.

- **You Will Always get a Fair Deal**

Superior Software has built up a reputation for honest dealing and dependability. We are one of the few software houses that have been in business since the start of the home computer software boom in 1982.

"I've worked for other software companies and regretably I have to say that I feel I've been ripped off on most programs I've written. Last year I showed Superior Software my Sinbad game, and they made me an offer which was more than double the highest offers I'd been given elsewhere." . . . Jason Benham, author of The Legend of Sinbad.

- **We are a Medium-Sized Software House**

Being a medium-sized software house has its advantages for our programmers. We are large enough that we can afford to launch new software with expensive advertising campaigns and all the necessary razzamatazz. However, we are not so large that your program will get lost among a mass of new releases.

"I used to work for another software house, and I never got to speak to any of the directors nor anyone with any major influence within the company. At Superior Software, I deal directly with the Managing Director. Perhaps more importantly, just 6 weeks after the release of Stryker's Run I received my first royalty cheque which amounted to more than £5000. Whereas obtaining my royalties due from the other company was like getting blood out of a stone; it took several months of nagging and chasing before they paid me the money they owed me." . . . Chris Roberts, author of Stryker's Run.

- Our **free booklet** "Success in Software" tells you more about the Company and our exciting plans for the future.

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Phone .... Date-of-Birth ....

Computers Owned (or accessible)
(Please tick appropriate boxes)

- Spectrum ☐
- Commodore 64/128 ☐
- Commodore 16/+4 ☐
- Commodore Amiga ☐
- Amstrad 464/664/6128 ☐
- Amstrad 1512 PC ☐
- Atari ST ☐
- BBC Micro ☐
- Electron ☐
- Other (please specify) ☐

Interests
(Please tick appropriate boxes)

- Arcade Games ☐
- Strategic Games ☐
- Utilities ☐
- Business Programs ☐
- Designing Games ☐
- Designing Graphics/Loading Screens ☐
- Composing computer music ☐
- Other (please specify) ☐

Major Programs Written or Under Development

Title	Computer	Publishing Company

Any other relevant information

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Telephone: 0532 459453.

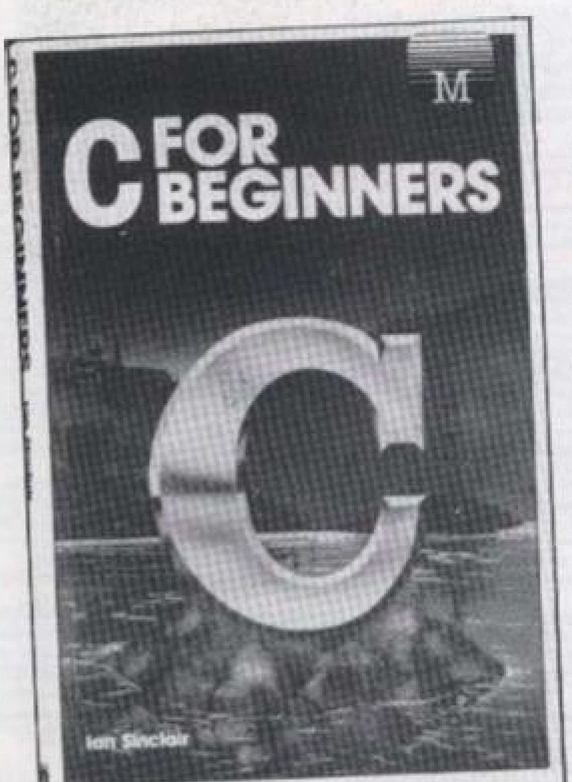
books

C for Beginners

Author: Ian Sinclair
Publisher: Melbourne House
Price: £10.95

"Given the choice, craftsmen choose sharp chisels and learn not to cut themselves. In computing language terms, C is a very sharp chisel." In many ways this sentence sums up the author's view of a language with which he is obviously very familiar. C is a high level language which many professional programmers see as the only viable alternative to using assembly language. Yes, it is slightly slower, but it is also simpler to handle, and more importantly easier to debug.

Originally, C was written as an improvement on BCPL and B, languages that had been popular among programmers, but which lacked the fluidity for taks other than number crunching. Although designed specifically to run with the acclaimed UNIX operating system, recently C has found a much larger audience thanks to the numerous versions of C



produced for 8 and 16 bit micros by companies such as HiSoft and Lattice.

For users of today's personal computers, the jump from Basic to C is becoming easier. As Basic becomes more and more structured, and closer to languages such as COMAL and Pascal, then the advantages of C become clearer. The author of this book sums up the advantages of C as "structure, compactness and portability"

It is the element of portability that makes C such a popular language for creating professional programs. A program written in C for one machine can almost certainly be quickly ported onto a different version of C on a different machine. This also means that the examples and listings in this book, although written using HiSoft C on am Amstrad 6128, will almost certainly run on, for example, an IBM PC using Lattice C.

Chapter by chapter, Mr Sinclair guides you through the ins and outs of using C. From early sections discussing the principles of C to controlling complicated algorithms, the book manages to clarify many aspects of a language which is, to most in the microcomputer market, rather unclear.

Overall, C for Beginners is exactly what its name suggests. It could be criticised for assuming too much knowledge, however it could also be argued that anyone likely to buy this book would already be knowledgable on the aspects of computer languages on which this book harps.

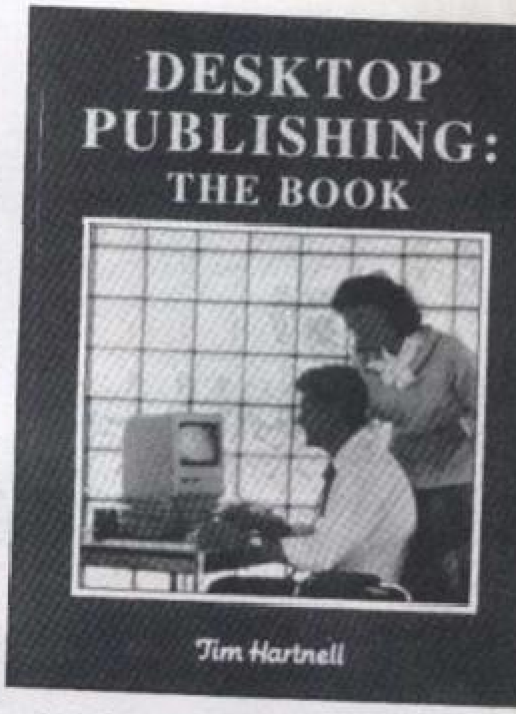
If you are interested in C, and are seriously trying to begin programming, or in the midst of deciding whether or not C is the language for you, then this book could prove both interesting and informative.

Desktop Publishing The Book

Author: Tim Hartnell
Publisher: Interface Publications
Price: £6.95

I suppose it is a recommendation for this book that it was obviously created on an Apple Macintosh using Pagemaker and a Laserwriter. Tim Hartnell is a very well known figure in computer publishing, having written about everything from games on the Spectrum to artificial intelligence on the IBM. Unfortunately this 'jack of all trades' attitude means that some of his books lack the depth one might reasonably expect.

The book starts with a chapter on the origins of desktop publishing (DTP), and is then followed by a chapter on how to design and layout your printed page. This chapter assumes that you have no prior knowledge of anything to do with publishing, and even goes so far as to tell you



which fonts you should use, and how to create a font template.

After brief paragraphs on justification, headlines, and using graphics, we come to chapter three entitled "Know Your Resources". This deals with categorising the variety of text and graphic fonts that certain printers provide, with page after page of fonts in a variety of shapes and sizes (including some text in a staggering 181 point, which is the stuff Rupert Murdoch's headlines are made of.

Later chapters include examples of how certain Australians (for this is where Mr Hartnell lives and writes) have made use of the DTP boom, including case studies of businesses that have successfully made the most of the technology at hand. In many ways this is the most interesting part of the book, as this is a new business area, and one which is beginning to take off in the UK.

Included in the chapter discussing the running of a DTP bureau are a variety of different mock-up advertisements which are, I suppose, intended to show how it should be done. For many people reading this book, these will be of little interest and although the idea is novel, the depth into which the author has gone cannot reasonably be justified.

The book continues in this fashion, covering aspects of DTP that really seem of very little relevance except to someone who wants to write a book on the subject. The book is neither highly technical, nor is it designed to help you make the most of one system. It tries, unsuccessfully, to be all things to all people, and I cannot really image who would purchase it, bar a few gullible people considering the pros and cons of investing in a Macintosh.

Flight

Author: C
Publisher
Price: £7.

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Flight Simulator Co-pilot

Author: Charles Gulick
Publisher: Microsoft Press (Penguin)
Price: £7.95

If the cover feature on flight simulators whets your appetite, you might well be interested in this guide to the well-known Sublogic simulation software.

The book covers the versions of Flight Simulator II for the IBM PC, Apple II, Atari 800 and Commodore 64. The newer, more advanced Atari ST and Amiga versions are not covered, unfortunately.

The 134-page paperback consists of two distinct portions. The first eleven chapters form a basic flying course, teaching the budding aviator the rudiments of taxying, take-off, a range of aerial manoeuvres and the subsequent landing.

Each of the next twenty chapters gives detailed instructions for, and descriptions of, flights from the many airfields which form the digital world of the flight simulator. Many of the flights require the additional scenery disks available for Flight Simulator II, but these can be hard to find in the UK.

The reader is supposed to use the book in conjunction with the program itself, using the pause facility to catch up with the next paragraph without flying into something solid. The author introduces new flying or navigation techniques in most flights, so the reader ends each session with a sense of achievement (as long as he has succeeded).

There is little wrong with the basic learn-to-fly part of the book, and many of the flights detailed show off the computer-generated scenery to good effect, but we found the over-chatty American style slightly irritating. Another complaint is the perfect-bound paperback format. This book is meant to be read while the reader operates the flight simulator on his computer – surely it would be better if it could be left lying open at a given page? Ring-binding would be much more sensible.



High-Tech Espionage

Author: Jay Tuck
Publisher: Sidgwick & Jackson
Price £10.95

CoCom, the Co-ordinating Committee for East-West Trade, has received a bad press recently. The watchdog which is supposed to prevent vital technological secrets being exported to the Soviet Bloc, has been criticised both for being ineffective and for trying to impose unacceptable restrictions on British and European companies by applying US law to American computers they have bought.

What is not so often highlighted is the scale of the problem CoCom faces. In *High-Tech Espionage*, author Jay Tuck gives detailed accounts of several cases in which computers and electronic components of possible strategic value have been exported illegally to destinations behind the Iron Curtain.

According to Tuck, the acquisition of technical know-how is now the highest priority of Soviet espionage efforts. He makes a convincing case for this hypothesis, detailing such unlikely-sounding stories as the Chinese financial whizz-kid who was commissioned to buy banks in California's Silicon Valley for the KGB. The plan was to infiltrate KGB agents into the boardrooms of the capital-hungry new technology industries in the area, with a view to applying financial pressure to induce companies to co-operate with dubious export practices.

Many of the incidents related in the book are hard to believe, especially as Tuck relates them in a racy thriller-like narrative. To forestall possible accusations of exaggeration, Tuck documents his cases well, with names named throughout. He also provides details of many sources which confirm his own research.

Nine chapters of the book run through particular cases of high-tech espionage, then the remaining four attempt to place them into context by discussing the consequences of the lost secrets. The final chapter, on the defensive measures now being taken, is particularly interesting. Tuck thinks CoCom is a toothless watchdog and sees no easy way to plug the leaks upon which the Soviet Bloc relies.

High-Tech Espionage is tightly written and succeeds in maintaining a high level of tension even when going into technical matters. It is a fine piece of investigative journalism which *Your Computer* readers would find well worth reading.



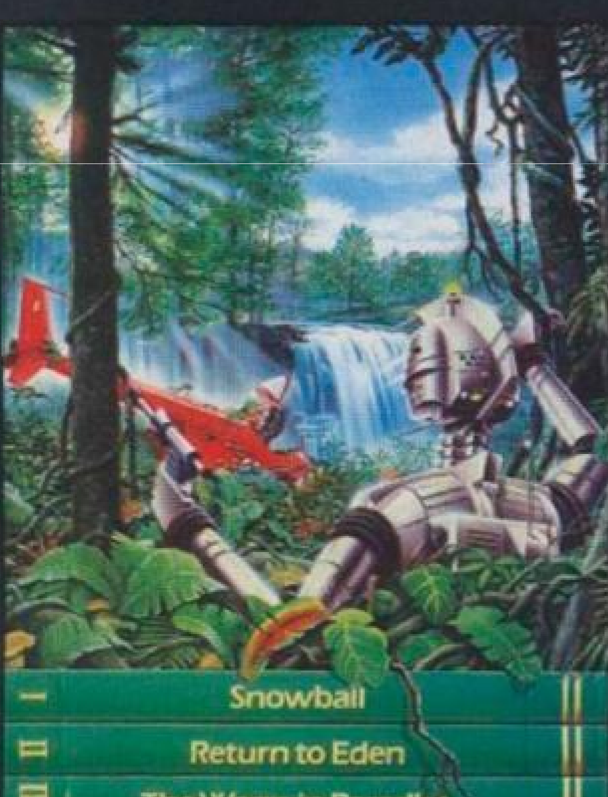
ADVENTURE PLAYGROUND

Even *Your Computer* readers have trouble solving adventures. Mike Gerrard offers a helping hand.

The new improved *Your Computer* had to include new improved adventure pages too, and here they are. Adventurers being fairly astute people, you will no doubt have noticed there are no software reviews here. This is an improvement? Yes, it is, because new adventures will from now on be reviewed separately in the software review section of the magazine, leaving all this space which the editor tells me I can fill with whatever I like . . . well, within reason. Too obsessive an interest in the rude commands you can enter in *The Leather Goddesses of Phobos* will no doubt be subject to censorship (though if you want to know what some of those are you should write to me enclosing plain brown s.a.e. and a copy of your birth certificate to prove that you're over 18. Apart from the occasional joke, hopefully not too offensive, readers should note that this will be a non-sexist section of the magazine. Vast amounts of mail over the last few years have shown me that more women play adventures than are involved in any other area of computing, so that will be reflected here, I hope.

In fact, though, rather than fill these pages with whatever *I* like, I'd prefer to fill them with whatever *you* like. In order to do that, of course, I'll need to know what that is, so please feel free to put pen to paper or fingers to keyboard – in fact you can put whatever you like to whatever else that you like just so long as the results are readable and to do with adventures.

As it will take me a while to get to know the *Your Computer* readers, let's begin by telling you a little about me so that you know who you're writing to. My first computer was a then-exciting Dragon (don't snigger), which I bought about four years ago to find out what home computers were all about, and what adventures were all about, having heard so much about them from my computer-mad brother, Pete. Yes, *that* Pete Gerrard, the one who's written more books about the Commodore 64 than you've had overheated power supplies.



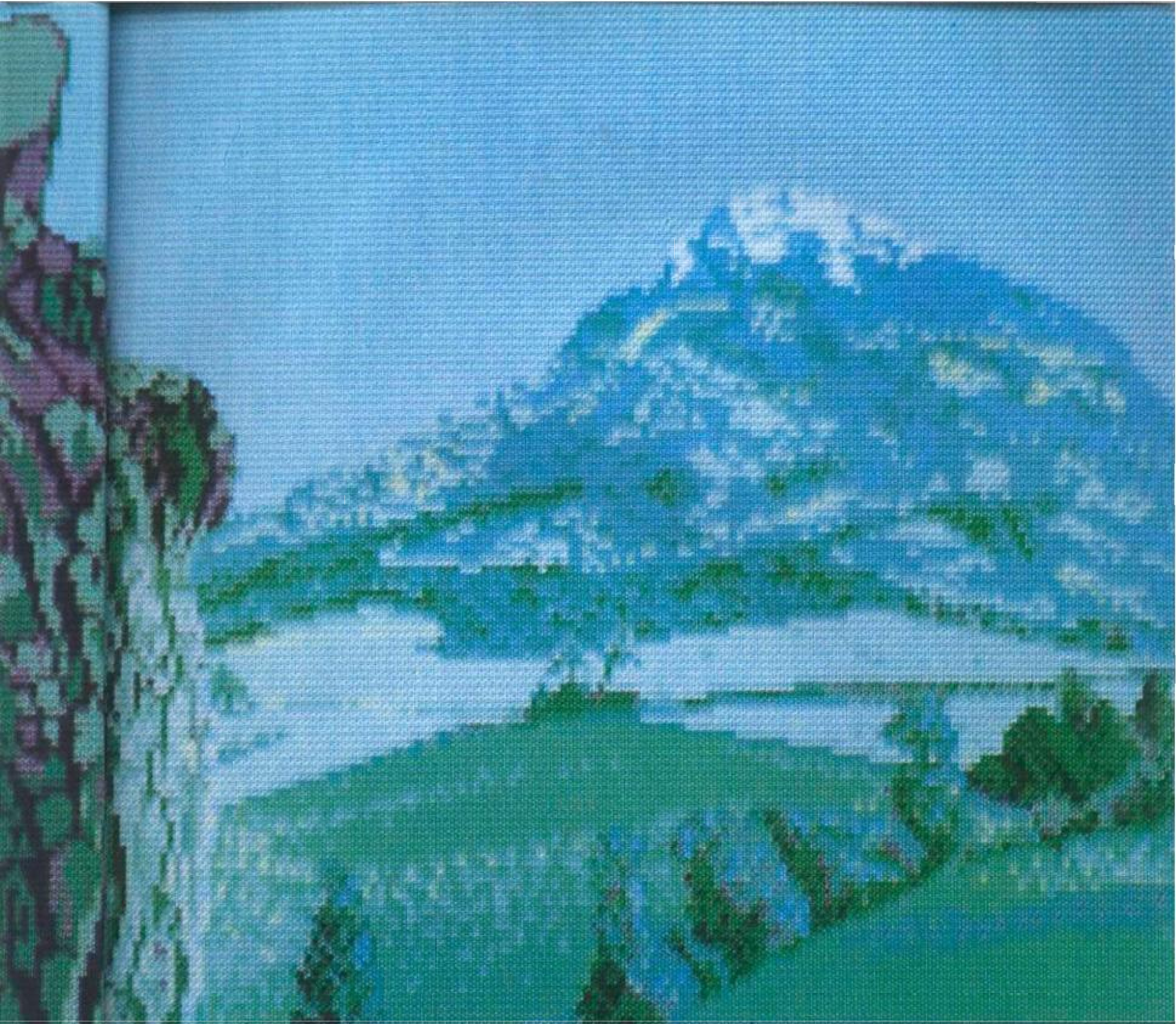
Having acquired a Dragon, I then looked round for adventures to play on it. I'd have stood a better chance of finding a real troll to slay. I typed in an adventure-game from *Your Computer*, the first micro magazine I bought every month (honestly!), and then acquired one of those abysmal compilation tapes of Basic programs that idiots like me would buy simply because there was no other software around. The tape included a sort-of adventure based round a Haunted House theme, but the first real fun game I played was *Pimania*, as close to being a conventional adventure as Automata were a conventional software house, but from then on I was hooked.

The only hope on the Dragon's horizon for real adventuring was the vague prospect of Level 9 converting their first few titles, but the prospect never became a reality and so I acquired a Spectrum and discovered the joys of *Snowball*, *The Hobbit*, *Twin Kingdom Valley* and *Urban Upstart*. The adventure bug really bites you, and no sooner are you satisfied that at last you can play real adventures than you discover that everyone else is raving about a game called *Zork*, and to play that you need something like a Commodore 64 with a disk drive. So I took out a second mortgage and got a Commodore 64 with a disk drive.

Fortunately I'd also started to write about adventures by this time, with a regular column in *Dragon User* magazine, and I've done that for the last three years, only recently handing it over to my brother as the Dragon commercial software scene has dried to a trickle and readers wanted to know more and more about writing their own adventures, which as a non-programmer I wasn't able to help them



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I've no bias towards any particular machine, apart from my beloved Amstrad PCW, which I love because it helps me do my work so much more quickly and also means at last I can play Infocom games with a disk drive that's infinitely faster than the dreaded Commodore 64's – did you realise that Infocom has to specially rewrite the Commodore versions of their adventures to speed things up? It's true. Too many dwarves were dying of old age and clogging up the drive heads. To prove I've no bias when it comes to machines, I write or have written adventure columns not only in *Dragon User* but also *MSX Computing*, *Your Sinclair* and *Putting Your Amstrad to Work*. A fair cross-section of machines, I think you'll agree.

One thing I'm often asked by readers of those various magazines is whether I've written any adventures myself. No solo efforts, but with the aid of kid brother, Programmin' Pete, I designed an adventure based on *The Odyssey*, which was published for the CBM64 by Duckworth, and we also collaborated on an adaptation of a Sherlock Holmes story for the Amstrad, *The Sign of Four*, which was published as a three-part magazine listing. To familiarise myself with *The Quill* when that utility came out, I wrote a little Spectrum adventure for my own amusement, called *One of Our Wombats is Missing*, for which software houses are invited to write in with their bids.

This column won't be covering the programming of adventures as such, but I regard utilities like *The Quill*, *The Graphics Adventure Creator* and *The Professional Adventure Writer* as one of the more interesting and exciting developments in the adventure field, and so I hope to be covering those in some detail over the months to come. Any tips you have or questions you want answered,

● **The Pawn from Magnetic Scrolls has set new standards in graphics.**

do write in. I can't promise to be able to answer them myself, but if I can't then I'll do my best to find you someone who can. The same goes for your adventure queries – anywhere you're stuck, let me know and I'll try to unstick you. The only requirement I make is that whatever you're writing about, always enclose an SAE. No SAE, no comment.

As my own adventure interests have moved on from simple Basic magazine listings to more sophisticated games, so too will that be reflected in the area that the *Your Computer* adventure section will be covering. It has to be said that the best games are now coming out on machines like the Amstrads PCW and 6128, the Atari ST, Amiga, Macintosh, PCs and others of that ilk. The Commodore 64 still has some of the best new disk releases from America, so that machine won't be ▶

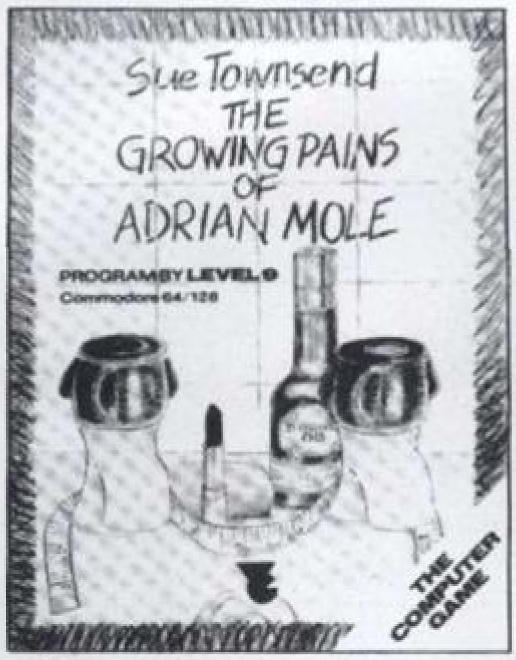
neglected – in fact no machine will be neglected if anything of quality comes out for it. If I spot a good adventure on the Spectrum, I won't ignore it.

So what do I think are the best adventures these days? There's no doubt that Infocom still has no rival as far as I'm concerned. The last few months were a little worrying when they seemed to be releasing games faster than Alan Sugar was building computers, with *Leather Goddesses, Trinity, Moonmist* and *A Mind Forever Voyaging* all tumbling over each other in their haste to get you glued to your keyboard, but quantity didn't seem to affect quality and despite challenges from our own Level 9 and Magnetic Scrolls, Infocom is still the company to beat if you want to say you're producing the best adventures.

Minds you, Magnetic Scrolls didn't get off to a bad start with *The Pawn*, did they? Many people rated this their adventure of the year, and I can understand why. On some machines the graphics were stunning, and even on the green-screen PCW they were pretty impressive. I'm still playing that one, which is a very good sign when you've got dozens of adventures coming at you every month and have to be choosy about which ones you load up. I don't think the parser is as impressive as it claims to be, though. I'm sick and tired of reading that you can PLANT THE POT PLANT IN THE PLANT POT WITH THE TROWEL, but does any parser really need to be that sophisticated? Especially when it won't respond to simple commands like IN and OUT. I'm not knocking *The Pawn*, just pointing out that it isn't the greatest invention since knicker elastic. I still think the basic story and text are some of the most enjoyable you'll come across, and I'm greatly looking forward to the next Magnetic Scrolls title, *Guild of Thieves*, which is due out "in the spring" for the Atari ST and 800/130, Mac, Amiga, CBM 64/128, Amstrad 6128/PCW, PC and Apple II. Rainbird recently announced that they'll be publishing no less than five more titles from Magnetic Scrolls after this, over the next two years, and trying to image what the state of the art will be like by that time is enough to make your dongle boggle.

No mention of state-of-the-art could pass without a reference to Level 9, who have done more to improve the quality of British adventures than anyone. I feel that this company is marred only by a tendency to take itself too seriously, with too much of a liking for knocking the opposition rather than allowing its products to speak for themselves. A strange press release was sent out shortly after the release of Incentive's *Graphics Adventure Creator*, pointing out that Level 9's own adventure writing system was vastly superior, and don't you forget it. Incentive had never claimed that *GAC* was a better system than Level 9 has, so why should Level 9 get so uppity about it? *GAC* was available for people to purchase if they wanted it, while Level 9's system wasn't, something Level 9 omitted to mention.

Another of their press releases claimed that the parser they'd come up with for their later games like *The Price of Magik* and *The Worm in Paradise* was an "Infocom-buster". This just wasn't the case, as I discovered when I typed in the word 'bird' only to get a response about 'the bird-cage'. If your parser only reads the first four letters of an input, sometimes even less, you can't hope for it to be better than one which always reads at least the first six letters of each word. Nor can I, off-hand, recall spotting any spelling errors in Infocom games, though Level 9 usually manages to incorporate one or two



● Adrian Mole: spelling practice needed.

in each new title. The other day I received a preview copy of their adaptation of *The Growing Pains of Adrian Mole*, which showed that they need spelling practice over the difference between licence and license, and practicing and practising.

Is this nit-picking? No, I don't think it is, as if adventure games are going to be taken seriously in the entertainment market then they should have the same standard applied to them as any other medium. I wouldn't expect to find a spelling mistake in a book, so why in an adventure program? You wouldn't expect to see faults cropping up in TV or radio programmes, so why tolerate bugs in adventure programs? I know they provide fun, and I do have a sneaking fondness for them in the same way that we all love laughing at TV programs like Denis Norden's collections of out-takes, though I do wish more bugs were out-takes instead of being left in.

Getting back to Level 9, although I've knocked them a little here, it's only because they set themselves up for it. If they didn't make such grand claims for their parser, you wouldn't feel obliged to point out where it falls down. But aside from the faults, which are really very few, they are producing games of excellent quality, and improving all the time. I felt that *The Worm in Paradise* was their best release yet, and as well as having an intriguing and enjoyable opening to get you into the game, it also raised interesting political and social points when you got there, but without battering you over the head with them. Would that their press releases were so restrained! *Worm* made you think about what an ideal society might be, and it created a reasonably believable world in which you as the character had to function.

For me, adventures began to become more potentially exciting when people started to realise that they didn't all have to be about dungeons and dragons. Sci-fi adventures came out, then crime thrillers, humourous adventures, and an unjustly neglected title based on the oldest adventure story in existence, Homer's *The Odyssey*. One of my favourite games was *Denis Through the Drinking Glass*, the adventure lover's equivalent to a *Private Eye* subscription, and I remember my disappointment on hearing from the programmer how few copies that game actually sold, so few that the planned follow-up, *The Tebbit*, never saw the light of day. What a shame that was, and I was disppointed because I'd hoped that adventure players might see the potential of such a game, and adventures of all types would flourish so that people has as wide a choice in those as they did from books or films.

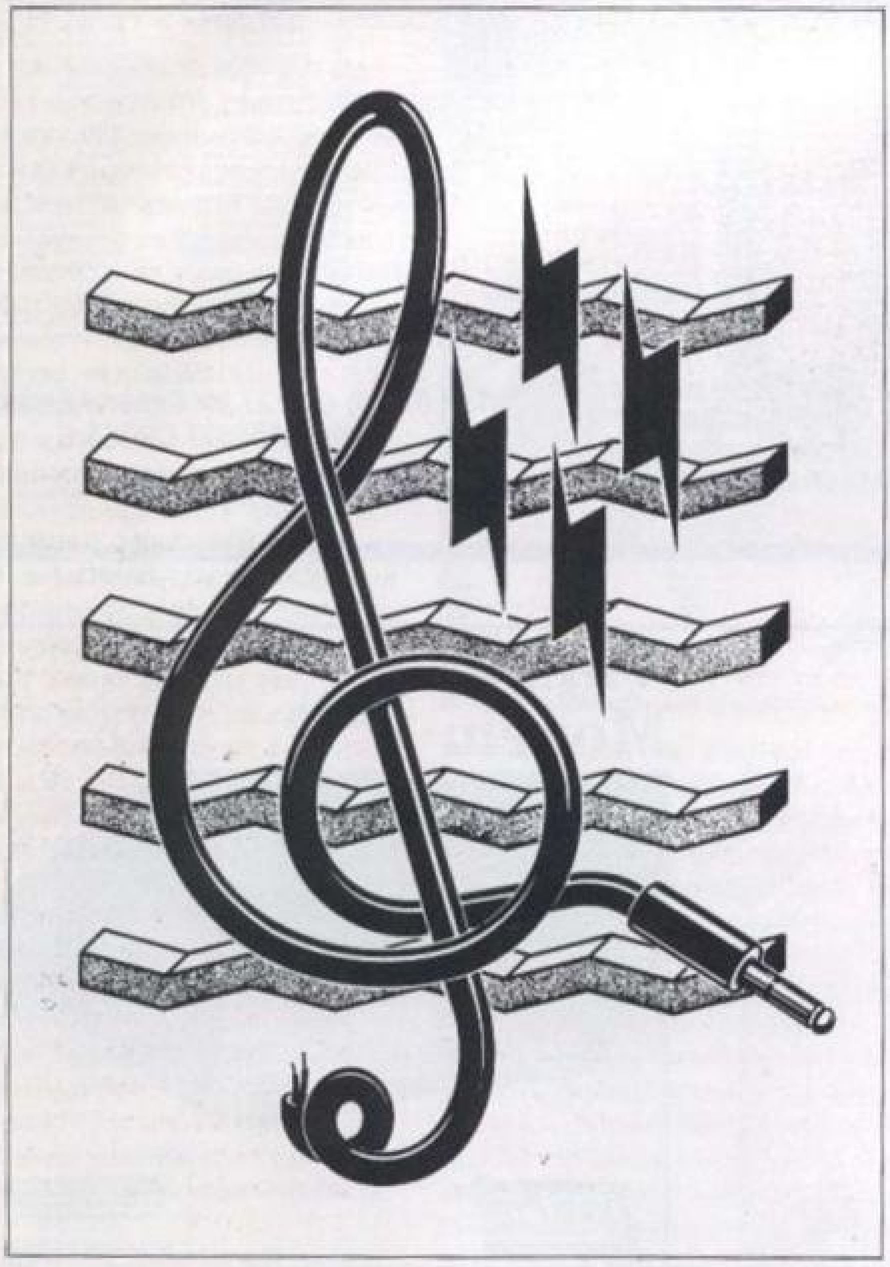
It seems to be taking a while for that to happen, but with the ever-increasing numbers of users with disk systems, and the advent of sophisticated machines like the Macintosh and ST, perhaps the time is right for another leap forward for the adventure player. While I'm a great lover of the text-only adventure, I don't mind graphics at all just as long as I can switch them off if I want, and it doesn't mean the adventure itself suffers because of the memory consumed by the pretty (or, which is worse, not-so-pretty) pictures. But I do find the recent innovations in what might be called graphics-only adventures interesting too. Watching an icon-controlled adventure on a friend's Mac had me drooling – though fortunately I wasn't leaning over the keyboard at the time. The prospect of picking up any object in the location's picture, examining it, opening pockets in coats, opening wallets in pockets, opening secret compartments in wallets, turning the pages of diaries – wow! Anyone got a Mac they don't want?

In this first column I've tried to raise some of the points that interest me about adventures, but I really do want to hear what interests you, too. I won't receive your letters in time for the next issue, which has to be written by the time you read this, but in the issue after that the adventure section will be very much a two-way affair. WHAT NOW? Write now. Right now.

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MUSIC SCORE



TONY SACKS EXAMINES A MIDI MUSIC SYSTEM DESIGNED BY CHEETAH MARKETING FOR AMSTRAD AND SPECTRUM OWNERS. IT OFFERS GOOD VALUE FOR MONEY.

The boundaries between the worlds of the computer enthusiast and the musician are becoming increasingly blurred. Many musicians, especially those playing electronic instruments, are beginning to regard the computer as an indispensible part of their equipment. Similarly, computer buffs are finding that their micros can be transformed into powerful musical instruments by coupling them to relatively cheap hardware add-ons.

No single product illustrates this crossover better than the new Cheetah MK5 musical keyboard. At first glance it looks as if it could be a synthesiser of some kind but closer examination reveals that it has no sound-generating circuitry of its own. It is helpless without the aid of a micro or an electronic musical instrument.

Cheetah was originally commissioned by Boots to develop a keyboard and software to drive the sound chip built into recent versions of the Sinclair Spectrum – the 128K and Plus 2 models – and the Amstrad CPC range of micros. Not only has Cheetah met this brief with the MK5 but it has gone much further by producing a keyboard which can be used to control almost any modern electronic musical instrument.

The key to this versatility is Midi – the *Musical Instrument Digital Interface* – the electronic Esperanto of synthesisers, drum machines and other electronic instruments. For the uninitiated, Midi is a hardware and software standard drawn up originally by the major electronic instrument manufacturers to allow their various products to communicate with each other.

Most electronic instruments now sport the tell-tale Midi DIN sockets. Simply by connecting one instrument's Midi Out socket by a hifi-style lead to another's Midi In socket, a musician play both instruments simultaneously. The instrument being played emits a string of digital codes which the slave instrument deciphers to sound the same notes almost instantaneously.

SOFTWARE CHANNELS

Midi can carry other types of information. For example, data can be assigned to one of 16 software channels so that only those instruments tuned to that channel will respond to the data. Another Midi is to change the voice being generated by a remote instrument.

The sole purpose of the MK5 is to churn out Midi data of this type. In Midi parlance, it is a "mother" keyboard. This may seem like an extremely limited capability but, as we shall see, this is not the case.

The MK5 has five octaves of full-sized keys with a pleasing action. Although the keyboard has a professional feel, its origins as a home micro peripheral can be seen in its lack of an on/off switch and its use of an external power supply even though there is sufficient room for a built-in supply.

Controls are limited to a knurled wheel marked "pitchbend" and a button switch entitled "program/play". This switch toggles between the keyboard's two modes of operation. Not suprisingly, the play mode allows you to coax any Midi-equipped instruments connected to the MK5 single Midi socket to generate sounds as you run your fingers along the MK5 keys.

When you switch into the program mode, most of the keyboard goes dead while seven keys near the top of the keyboard take on new roles. Two of them shift the output of the keyboard up or down by one octave, effectively giving





● **The Cheetah keyboard is connected by a hardware module and software package, shown on the left. Cheetah can be reached on (0222) 77337.**

you a seven-octave range from the five-octave keyboard. A second pair selects on which of the 16 Midi channels data will be transmitted. The third pair, marked "program", chooses a voice number from the range 1 to 128. When the seventh key, marked "transmit", is pressed, the chosen value is sent on the selected Midi channel to any instrument tuned to that channel.

Light emitting diodes show which function is being altered, while a three-digit display indicates the channel number, octave or program number.

OCCASIONALLY CLUMSY

Although the dual role of some of the keys is a clever way of keeping down the price, it is occasionally clumsy in use and prevents you hearing immediately the effects of program changes. You have to interrupt the flow of your music-making to change voices or channels and until you learn which voice corresponds to which program number it can take a fair amount of flipping between the play and program modes.

The pitchbend wheel, mentioned previously, generates Midi codes to shift the notes slightly up or down in frequency. For best effect, such a shift should be a whole number of semitones up or down at its extremes. The MK5 does not really achieve this.

To meet Boots original objective of using the keyboard to control computer sound chips, the MK5 Midi port is connected via the Cheetah Midi Interface to either a 128K Spectrum or a CPC Amstrad. A program called Mini Synth translates the incoming Midi codes into frequency information to drive the sound chip. The software also lets you meddle with the character of the sound produced by the chip.

To get you started, about 20 examples of the type of sound you can produce are included with the package. You can tinker with them to produce variations or generate new sounds from scratch. Up to 64 sounds can be stored simultaneously in the micro memory and dumped to tape, Microdrive or disc as required.

The software allows the MK5 keyboard to be "split" so that different sounds can be played simultaneously on the top three and bottom two octaves. The three-channel limitation of the micro sound chip means that only three notes can be played at a time across the whole keyboard; if you play a fourth, the first note you played disappears.

A variety of screens and sub-menus let you adjust almost every aspect of the sound chip performance. For example, the "edit sound" screen lets you define seven "envelope" parameters including attack, decay and release rates and a sustain level. As you alter the values, their effects are shown on a graphical display of the envelope. You are always at least two key-presses away from *hearing* the effects of changing the parameters. This makes it a tedious process to "fine tune" a sound.

Among the many aspects of the sound which can be altered are tremelo delay and rate, and noise modulation. An eight-stage pitch selector allows you to generate some violently non-musical sounds. You can switch the pitchbend wheel on or off but you cannot vary the range over which it works.

A few times during testing, notes "stuck", remaining on after a key had been released. Although pressing the space bar can give a deliberate sustain effect, the jammed notes seemed to indicate a bug in the Mini Synth system which does not occur when the MK5 is being used as a Midi controller.

£400 SOPHISTICATION

The Mini Synth software seems to stretch the sound chip to its limits but those limits are sonically rather narrow. Using the MK5 just to drive this chip is like putting a moped engine in a Porsche chassis and it is unlikely that anyone would buy the MK5 if this was the extent of their music-making ambitions. After all, the combined keyboard and interface package costs almost £130, which is plenty to pay for an instrument which will play only three thin-sounding notes at a time.

It is as a controller of Midi instruments that the MK5 comes into its own. There is nothing like it on the market, certainly in its price range. Existing Midi mother keyboards tend to be rather more sophisticated and considerably more expensive. These up-market keyboards can usually sense the speed and strength with which the player hits the keys and can use those parameters to control the dynamics of the sounds for such sophistication you would have to pay at least £400. The MK5 costs just £99.95.

COMMENT

In this issue of *Your Computer*, we are using an all-formats Top 20 for the first time, and we are taking this chance to comment on how we see the chart, and any new developments. As with all the charts since Christmas, Gauntlet is still at number one, and the sales, particularly in Spectrum and Commodore format, are still very strong. The imminent release of new dungeons for this game and a new version for the Atari ST seems set to keep the sales high.

The rest of the chart shows the resurgence of budget game domination, especially in the shape of Mastertronic who have no fewer than five entries in the Top 20. Compilations are still going well, with Beau Jolly's television advertising evidently paying dividends. Paperboy is still selling well, despite some less than impressive reviews, and Elite also has Hit Pack and Space Harrier at the lower end of the Top 20.

Overall, the only real surprise is the late showing of Gunship, which although selling very well, has yet to reach the overall chart – next month perhaps.

TOP 20

Key
SP Spectrum
CO Commodore 64
AM Amstrad
BB BBC

ALL FORMATS COMBINED TOP 20

This	Last	Wks	Title	Publisher	Formats
1	1	9	Gauntlet	U.S. Gold	SP CO AM
2	2	15	180	Mastertronic	SP CO AM
3	8	12	BMX Simulator	Code Masters	SP CO AT
4	3	20	Paperboy	Elite	SP CO
5	7	10	Footballer Of The Year	Gremlin Graphics	SP CO AM BB AT
6	5	16	Ninja	Mastertronic	SP CO AM AT
7	13	7	Fist 2	Melbourne House	SP CO
8	6	11	Konami's Coin-Op Hits	Imagine	SP CO AM
9	4	19	Ollie And Lisa	Firebird	SP CO
10	16	5	Agent X	Mastertronic	SP
11	12	9	Hit Pack	Elite	SP CO AM
12	NE	1	Championship Wrestling	Epyx-U.S. Gold	CO
13	21	3	Jailbreak	Konami	SP CO AM
14	9	17	Comp. Hits 10 Vol 3	Beau Jolly	SP CO AM BB
15	11	21	Trivial Pursuit	Domark	SP CO AM BB AT
16	10	9	Space Harrier	Elite	SP CO AM
17	NE	1	Tenth Frame	U.S. Gold	SP CO AM
18	RE	2	Hyperbowl	Mastertronic	SP CO AM
19	15	12	Five Star Games	Beau Jolly	SP CO AM BB
20	22	6	La Swat	Mastertronic	CO AT

ATARI COMPETITION



Win one of four Atari 520 STFMs in this exclusive Your Computer competition, presented in conjunction with Silica Shop

To celebrate this impressive relaunch of *Your Computer*, we are giving away four Atari 520 STFM computers to the lucky winners of this competition. As most of you will already know, the ST is one of the most impressive home computers currently available. With 512K RAM, and a built in 720K 3½ inch disc drive, it lives up to Atari's slogan of power without the price. Our competition, however, gives you the chance of winning one of these machines for nothing more than the price of a stamp.

From now on, *Your Computer* will be focussing much more heavily on machines such as the Atari ST and Amiga, and therefore we feel that a competition to give away some of these excellent machines would be the perfect start to the magazine's new look.

To enter, simply answer the three questions below, and, in less than ten words, complete the tie-break. When you have done this, please send your entry to: *Your Computer*, 79-80, Petty France, London SW1H 9ED.

QUESTIONS

1. How many keys are there on a standard Atari 520 STFM keyboard? [94]
2. How many bytes of RAM are there in an Atari 520 STFM, expressed in binary? [512kb]
3. Which other large computer manufacturer was Jack Tramiel once responsible for? [C64]

TIE BREAK

I want to upgrade to an Atari 520 STFM because it's
amazing ???

COMPETITION RULES

- ★ The winners of the competition will be the persons who send the first all-correct entries drawn from all those received before the closing date of the competition.
- ★ The names of the winners will be announced in the June 1987 issue of *Your Computer*.
- ★ All entries must arrive at the *Your Computer* offices by the last working day in March, 1987.
- ★ Each person may enter the competition only once.
- ★ Entries to the competition cannot be acknowledged.
- ★ No employees of Focus Investments nor their agents or close relatives may enter the competition.
- ★ The decision of the Editor in all respects of the competition will be final.
- ★ No correspondence with regard to any aspect of the competition will be entered into.
- ★ Focus Investments assumes no responsibility or liability for any complaints arising from this competition.

What's up, Mac?



NEITHER A DESKTOP PUBLISHING PACKAGE NOR MERELY AN ART PROGRAM, MAC COMICWORKS MAKES ITS OWN NICHE IN THE MARKET. REVIEW BY ANDY PENNELL.

Ever since the Macintosh was released there has been a constant stream of graphics programs, starting with the most famous, *MacPaint*, originally supplied free with the machine. *ComicWorks* is the most advanced version yet seen on any micro, taking the usability and many features of MacPaint together with the page layout capabilities of *PageMaker*, but applied to graphics instead of text.

When I first heard about ComicWorks I thought "what a tiny market – how many people write comics?" The problem is really the name – this program can indeed make a comic writer's life easier, but it can do much more in the general graphics field. The design of the program was by Mike Saenz, an American comic book artist who wrote the first computer-generated comic, *Shatter*, using nothing more advanced than MacPaint in conjunction with a lot of time and skill. The result is a program which is ideal for designing pages or multi-page documents which contain bit-mapped graphics mixed with regular text.

Superficially it looks similar to MacPaint when you load it – there is a Tools window, containing many familiar icons and a few new ones, and a Patterns window, together with a main, blank window. Before you can draw anything you must create a *panel*. In the comic-strip sense a panel is one of the boxes which contains a particular section of the story. Having created a panel using one of the tools you are nearly ready to draw, and this is where ComicWorks and MacPaint-type programs differ. MacPaint and its friends treat everything as a large block of pixels, so while you can do intricate shading and lots of detailed work at a pixel level you cannot easily move things about once you have finished a particular section. Object-orientated programs like *MacDraw* treat everything as an object which can be moved around and re-sized at will, but these programs don't let you do any pixel-level editing. ComicWorks offers the best of both worlds, giving you all the MacPaint-type tools but with the object approach of MacDraw, best illustrated with an example.

Suppose you have spent a long time designing a landscape using the various tools available, and you've just got it finished. Now you want to add a spaceship flying over the top of it (OK, Constable it isn't) so in MacPaint you move to an empty area of the page and design it. When it's finished you want to put it over the landscape, probably using the lasso, and there you are. However, what if you then decide you want it in a different place, or want to change the landscape underneath it? Well, in MacPaint you're stuck, but it is easy in ComicWorks. Everything you draw in ComicWorks goes into an *easel*, which is a rectangle belonging to one of your panels. If you draw something in one easel and something else in another easel, you can put one on top of the other and then move either about, adjusting the positioning until it is right.

If you look at figure 1 you will see the light grey rectangle filling most of the main window, containing the landscape. In the middle of it you can see another, smaller rectangle with a dark grey border containing a spaceship, which is contained in an easel. The landscape was drawn in another easel, which is behind the spaceship. As the two are separate you can move them both about, and change the front-to-back priorities. As you can see the spaceship is surrounded by white, but this is only to make editing easier. If you click outside the panel the final effect can be seen in figure 2, as ComicWorks is smart enough to lose the easels' backgrounds when required. There is an option called Transparent Paper which lets you see exactly how the panel really looks while you are editing.

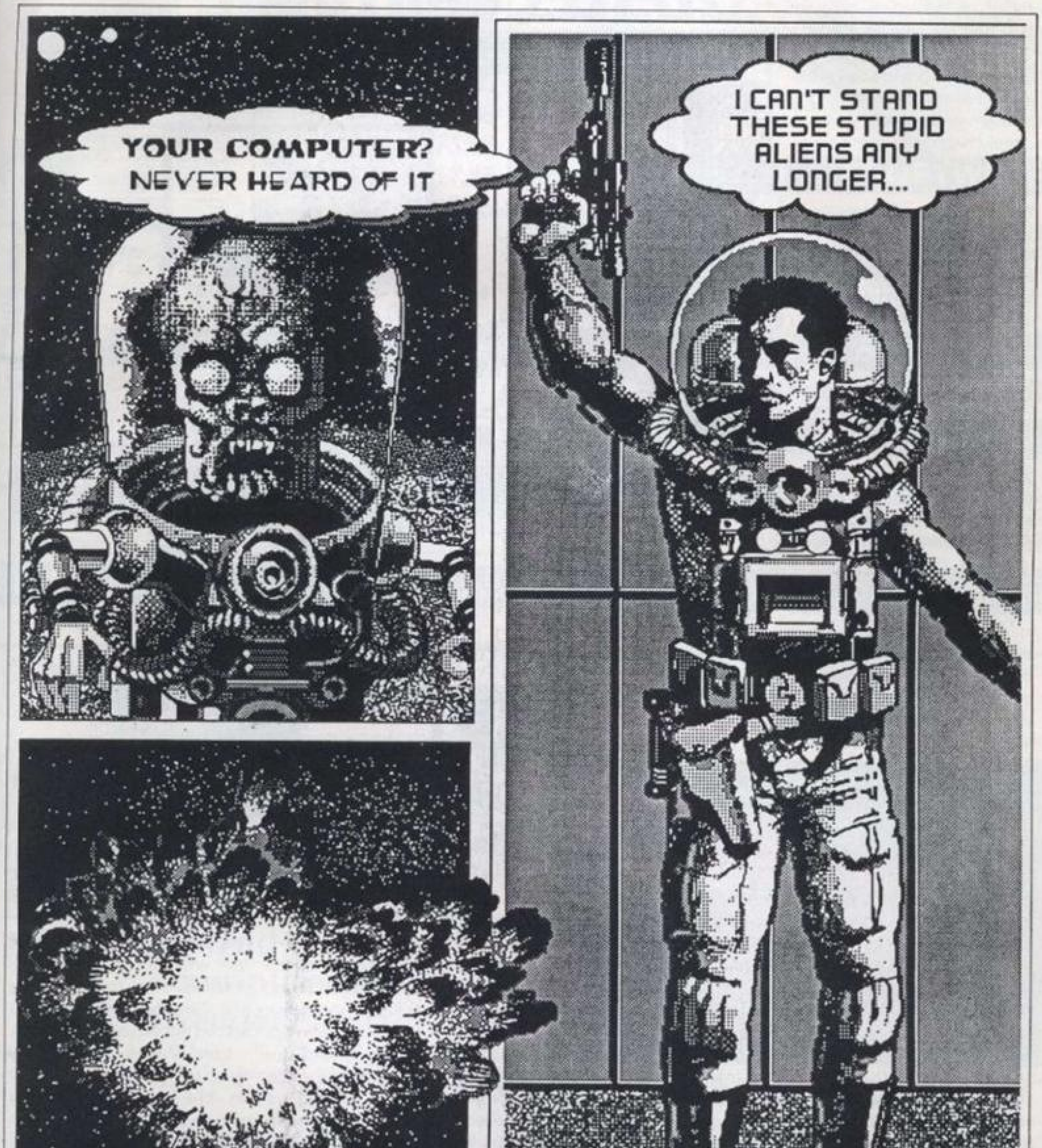
In addition to panels and easels you can also define balloons to contain text, another result of the comic origins of the program. There are no fewer than 18 different styles of balloon, six of which can be individually edited. They are very easy to use, just select the size of one and type in the text which will be centred for you automatically. You can have multiple fonts and styles in the same balloon (one up on MacDraw) and if you use the LaserWriter fonts they will come out in high quality at 300 dpi, though the manual warns of very long printing times if you mix lots of bit-mapped graphics and proper laser printer fonts. The only bug I

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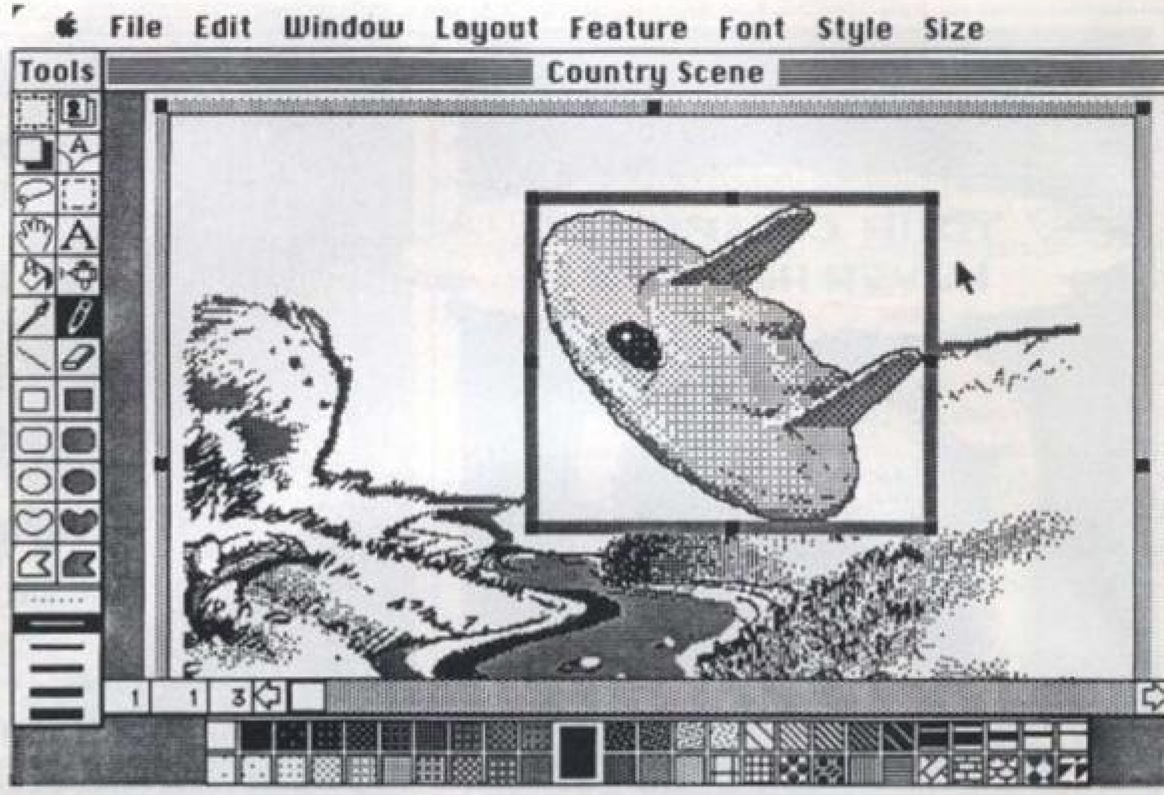


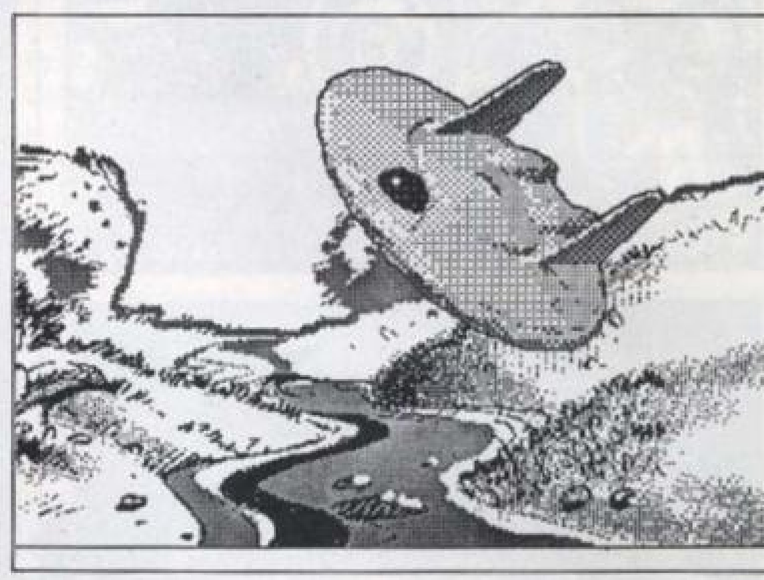
● Included with the program are a wide range of pre-drawn stupid aliens and avenging YC readers.

found in the whole program (not bad for version 1.0 of a 200K program) was to do with changing fonts and sizes in balloons, when the text in the bubble would simply go completely wrong. It wasn't a serious system error, just an annoyance that you can live with.

There are loads of other features, too. There's an airbrush tool like no other, with a definable size and speed accurately described in the manual as "the world's coolest airbrush", there's FatBits, as in MacPaint showing a magnification of the area you're working on, there are Mediumbits and Largebits too, for greater magnification, and even Thinbits, which divides the screen in two. One side shows the page at normal size, the other shows a reduction giving a complete view of the whole page, and all of the tools work in either half, making larger designs much easier. You can define a special format for greetings cards that will show you the folds and print the top half of the page upside down so you just have to fold it.

The program comes in a colourful package containing the manual and three disks. The program disk is completely full, without room for a Finder, the other disks containing mainly space-type artwork and comic stories. Mac owners with only one 400K drive will have problems getting a decent work disk together, but few owners are masochistic enough to try any serious work on the machine with such little storage. Two 400K drives or one 800K drive is fine, and as the program isn't copy protected it works easily from a hard- or RAM-disk. The manual is excellent, with two very clear and useful tutorials. Its only flaw is the lack of an index; finding specific pieces of information gets a bit tricky.





● **Figures 1 and 2 giving before-and-after views of author Pennell's stunning artistic imagination.**

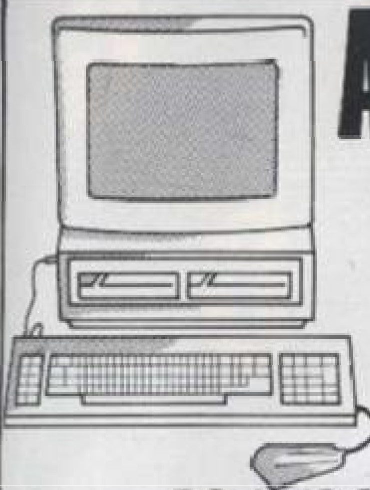
Supplied in addition to the main program is the Art Grabber+ desk accessory, a very useful tool which lets you copy part or all of any MacPaint image to the clipboard, and an FKEY resource which lets you copy part or all of the screen to the clipboard from any program at the press of a key. There is also PosterMaker, which lets you enlarge a page up to 3200% or down to 1% of its original size, printing on a LaserWriter or an Imagewriter. The sellotape is needed a bit for larger posters. The System file contains three extra fonts, Comic, Commando and Crypt, the first two useful for speech bubbles, the latter is great for horror stories and the like.

The program has very few faults, but have a few suggestions to the authors – a Group command, like MacDraw,m to attach separate objects to one another would make moving and re-sizing them easier, and some rulers would be handy too.

ComicWorks can produce multi-page documents if you have the memory and disk space to cope, though bit-mapped graphics are greedy for memory by definition. The general speed of the program is very impressive indeed, with nearly instant scrolling – occasionally it scrolled too fast for accurate measurement of panel sizes. It also shows what an amazing job Bill Atkinson did when writing Quickdraw, the section of the Mac Toolbox to do with graphics – no other machine can compete with the Mac when it comes to putting detailed, pixel level graphics and proportional multi-font text on to a windowed screen.

ComicWorks can do very much more than produce comics, but is useful for anyone who wants pages of mixed text and graphics. It's amazingly cheap, the manual is excellent, and some good artwork is supplied to get started on. ComicWorks is the graphics equivalent to PageMaker for page layouts and is also good fun.

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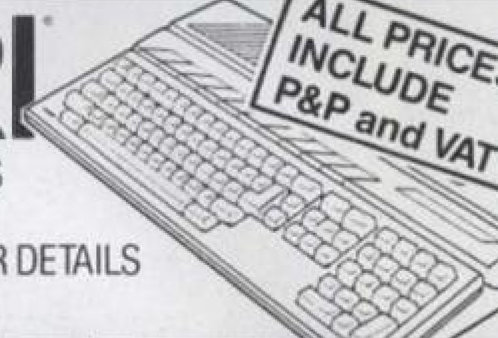
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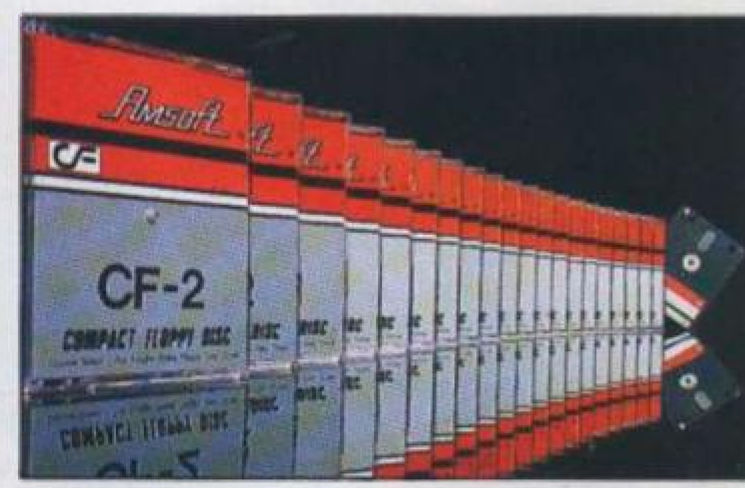
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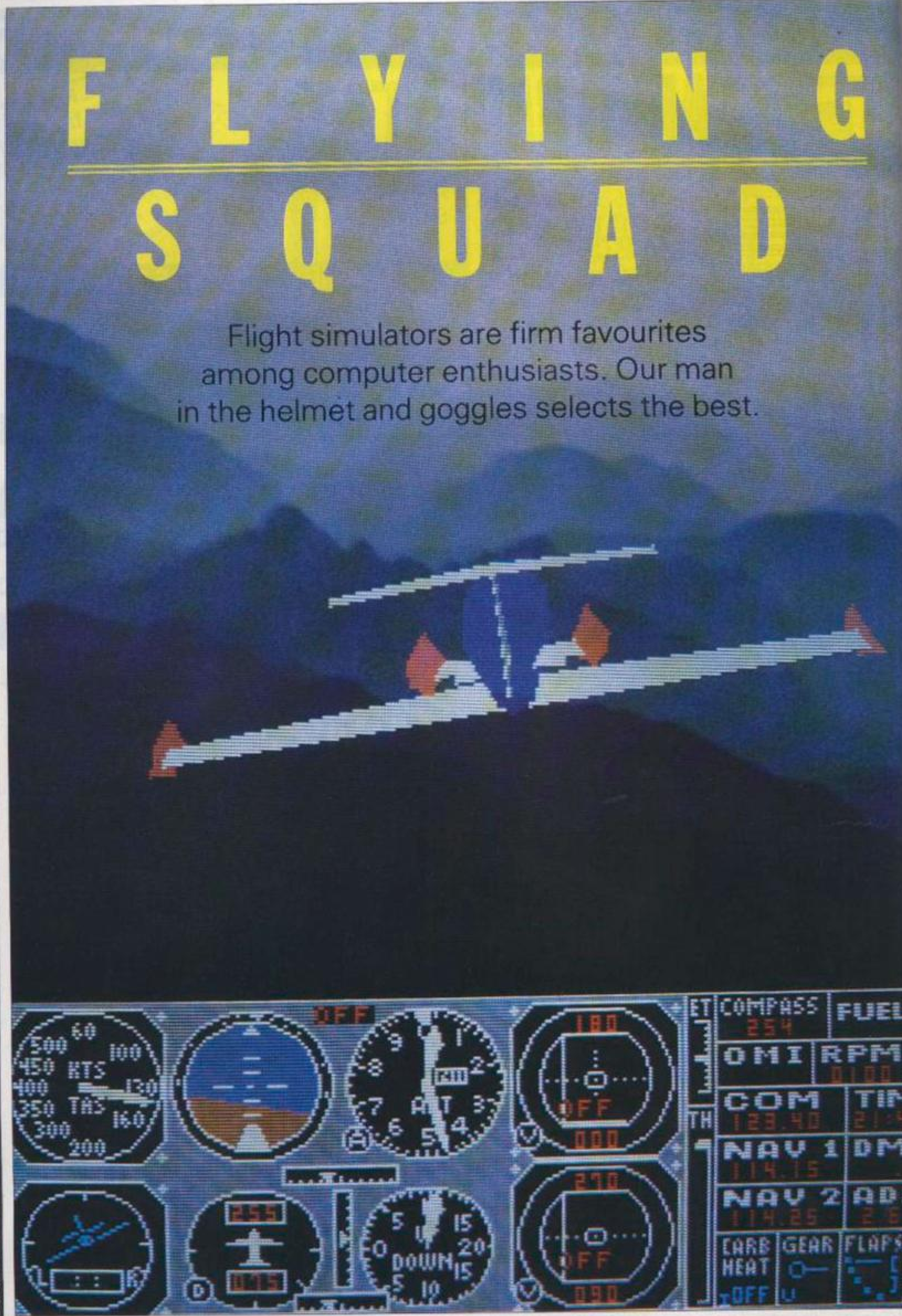
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FLYING SQUAD

Flight simulators are firm favourites among computer enthusiasts. Our man in the helmet and goggles selects the best.



PHOTOGRAPH BY MARTIN BARRAUD

Flight simulators have a special fascination for most of us. Who can deny a twinge of envy when they see the latest Rediffusion or Simuflite machine on *Tomorrow's World?*

They are certainly impressive, with full-scale airliner cockpits perched on effortlessly powerful hydraulic jacks. Each panel of the windscreen is in effect an individual high resolution colour monitor, yet the image of an outside world stays in perfect alignment as the pilot wheels the imaginary aircraft round the sky. Even the smallest details – the exact weight and friction of the controls, the tremors of vibration, the creaks and murmurs and even the smell of the real thing are reproduced.

Computers are supremely good at creating alternative realities for those of an escapist bent, as the success of adventure games and all kinds of programs from *TT Racer* to *Elite* testifies.

The simulation programs we buy in such large numbers for our personal computers are restricted to sound and graphics, however. Surely this means that experience on even the best micro simulators cannot be of any use when you finally try your hand at the genuine article?

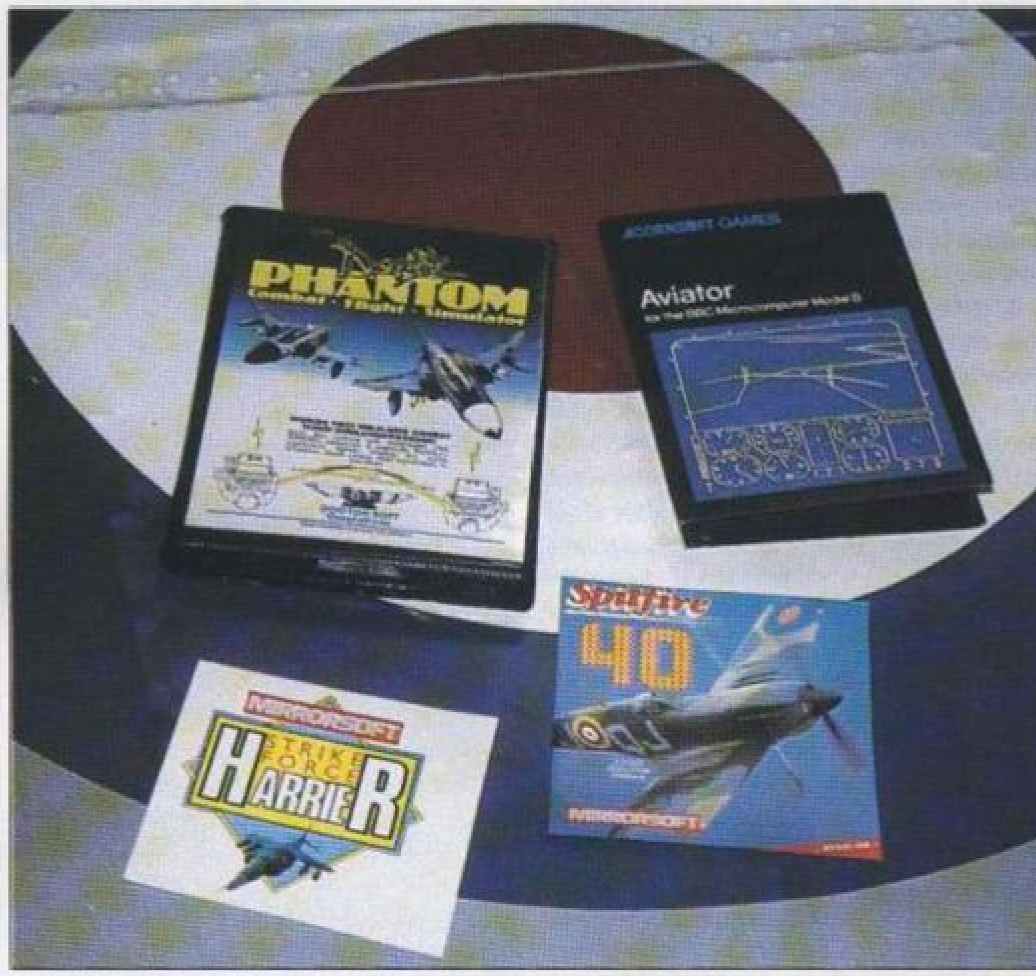
You might be surprised. The state of the art has advanced to a point where it rivals many of the professional training simulators of the 1960s. The first one I encountered was the RAF Hawker Hunter simulator. It was an instrument-only job – no view of the outside world, no movement, rudimentary sound. The Hunter was, and still is, a fairly potent piece of military hardware yet the computer power of a couple of minicomputers (DEC PDP-11s, if memory serves me correctly) was enough to provide a useful training tool. The processing power of a modern 68000-based personal computer is at least comparable and, as we shall see, flight simulation programs on modern personal computers are starting to be accepted as legitimate aids for some parts of flying training.

The home computer equivalent of this fake Hunter would be something like the ancient Molimerx program written originally for the Tandy TRS-80 Model 1. This later appeared in modified form on the BBC Micro, where it gave a passable imitation of a Boeing 747. Amazingly this program was written in Basic. It might seem unlikely, but it ran at a fair speed since it had to produce only engine and airflow sound, and update the instrument readings. A side benefit was that you could break into the program and fiddle with the variables to produce such interesting oddities as a ten-engined Jumbo or a grossly overloaded machine with 200 tons of fuel on board.

A contemporary was Sublogic's original Apple II flight simulator. This went a step further in giving a rudimentary line-drawing view of the world outside, though it was a very small world 25 miles square which many know in updated form as the World War One battleground in Sublogic's current FS11.

There had been even earlier attempts at flight simulation on microcomputers, but these were generally absurd Basic programs which asked you to type in power and elevator positions and then printed out your new position and speed on the screen. Playing this at school on one of the first specimens of the ghastly 4K Pet 2001 to enter the country, I crashed ignominiously every time, much to the amusement of the maths students who could time their landings to perfection. My protests that it just didn't fly like an aeroplane went unheeded.

For a while things went from bad to worse. The attempts at faithfulness to real aerodynamics went out of the window as the home computer boom got under way. Suddenly every software house worth its salt seemed to be offering the chance to be Biggles for £14.95. Quality suffered badly. The new programs were not written by programmers who cared passionately about the subject the way Bruce Artwick of Sublogic did. Pretty graphics and flashy packaging were much in evidence, but programs such as *Flight Path 737* and Atari's *Jumbo* cartridge were no closer to the real



● **Double Phantom, Aviator, Spitfire 40 and Strike Force Harrier.**

sensations of flight than an oven-ready turkey. These programs usually patterned themselves after lumbering airliners, presumably because the authors could not write code fast enough to reproduce the lightning-fast responses of a fighter. Aerobatics were also off the menu; not because it would be unrealistic to have a wide-body transport looping and rolling all over the sky, but because the algorithms in use would fall apart if the aircraft achieved a bank or pitch attitude much over 45 degrees.

To be fair, it was not the fault of the programmers. They were used to writing two-dimensional video games with simple arithmetic involved, and the two main requirements for a successful flight simulator are a fast, reliable three-dimensional landscaping system and a complete understanding of the mechanics of flight. Since many buyers were just after a different kind of video game anyway, these limitations did not prevent a fair degree of sales success.

In an attempt to appeal to computer users with a genuine interest in flying, some efforts started boasting advertising lines like "written by a real pilot". Unfortunately, very few pilots understand the mathematics of flight in the kind of depth required to write a realistic simulation algorithm. You do not need to be a physicist to be competent in the air.

Then some nice things happened. Sublogic's *Flight Simulator II* came out on the

Apple II, Atari 800 and Commodore 64. The IBM PC version, which was initially rather ropey, was vastly improved to make its responses more lifelike.

Bruce Artwick's choice of a conventional light aeroplane – either a Cessna 182RG or a Piper Warrior, depending on the version – was a brave one. After all, a jet of some kind would be more glamorous. The compensation comes with the sheer breadth and grandeur of the setting. Four large areas of scenery around the United States are available, each including notable real-life landmarks like the Statue of Liberty and Brooklyn Bridge. Another feature not previously seen on a home simulator is an environmental editor, allowing you to set and change winds, turbulence, cloud levels and time of day or night. Navigation from airfield to airfield is by realistic radio navaids.

Among British software developers the BBC Micro proved its suitability as a machine for simulation software, despite its limited memory. The key was the BBC's analogue-digital port which solved the problem of control movements.

Most people like to use joystick control for flight simulators for obvious reasons. Unfortunately most computers use eight-way switch-type joysticks which do not provide proportional control. You have no way of applying a little bit of bank, easing back gently to keep the nose up in the turn. It's all wham-bang fighter pilot heroics



● **Flight Simulator Co-pilot, a useful guide to Sublogic's FSII.**

with maximum control deflection – fine when you are streaking through the stratosphere but dangerously insensitive for hedge-hopping or landing.

Keyboard control, Sublogic style, at least lets you move the controls a little or a lot, depending on how long you keep the relevant key depressed, but the drawback here is that it can take a long time to move the controls from one extreme to the opposite, such as when you are recovering from a stall or converting a tight left turn into a right turn to shake off an enemy.

The BBC's A/D converter, coupled to an analogue joystick, enables you to wave the controls around from stop to stop or any position in between without delay. This was not lost on Geoffrey Crammond, a BBC programmer who had just designed a system of high-speed vector 3D graphics for landscape use, and was wondering how to use it in a commercial product. To his eternal credit he rejected the option of churning out a Battlezone lookalike tank commander game and created *Aviator* instead.

Among the video game community, Aviator is not particularly popular. Its graphics, although very smooth and fast, are restricted by memory limitations to black and white line drawings. It is also extremely difficult to operate successfully. There is no instant gratification to be had, and non-pilots have to read the manual thoroughly if they wish to last longer than a few seconds.

Crammond has practically no real flying experience, a fact which I certainly found hard to believe until he told me himself. The reason that Aviator is in many ways the simulator which most accurately mirrors the handling characteristics of a genuine aeroplane is the author's experience as a physicist. Geoffrey developed his algorithms right from first principles, assessing the cause and effect of every force acting on the aeroplane, in this case an early Supermarine Spitfire.

It is common for flight simulators to give you tasks to perform once you are sufficiently confident of your flying abilities. Aviator features a suspension bridge under which budding Chuck Yeagers will wish to fly, the more adventurous doubling their score by making the run inverted. Another nerve-wracking feat is to fly down the main street of a wire-frame town below the roof level of the lowest building. Again, the score is doubled for an inverted pass. Since the Spitfire is rather tricky to land compared to a modern jet or light aeroplane, you also score for pulling off a successful arrival.

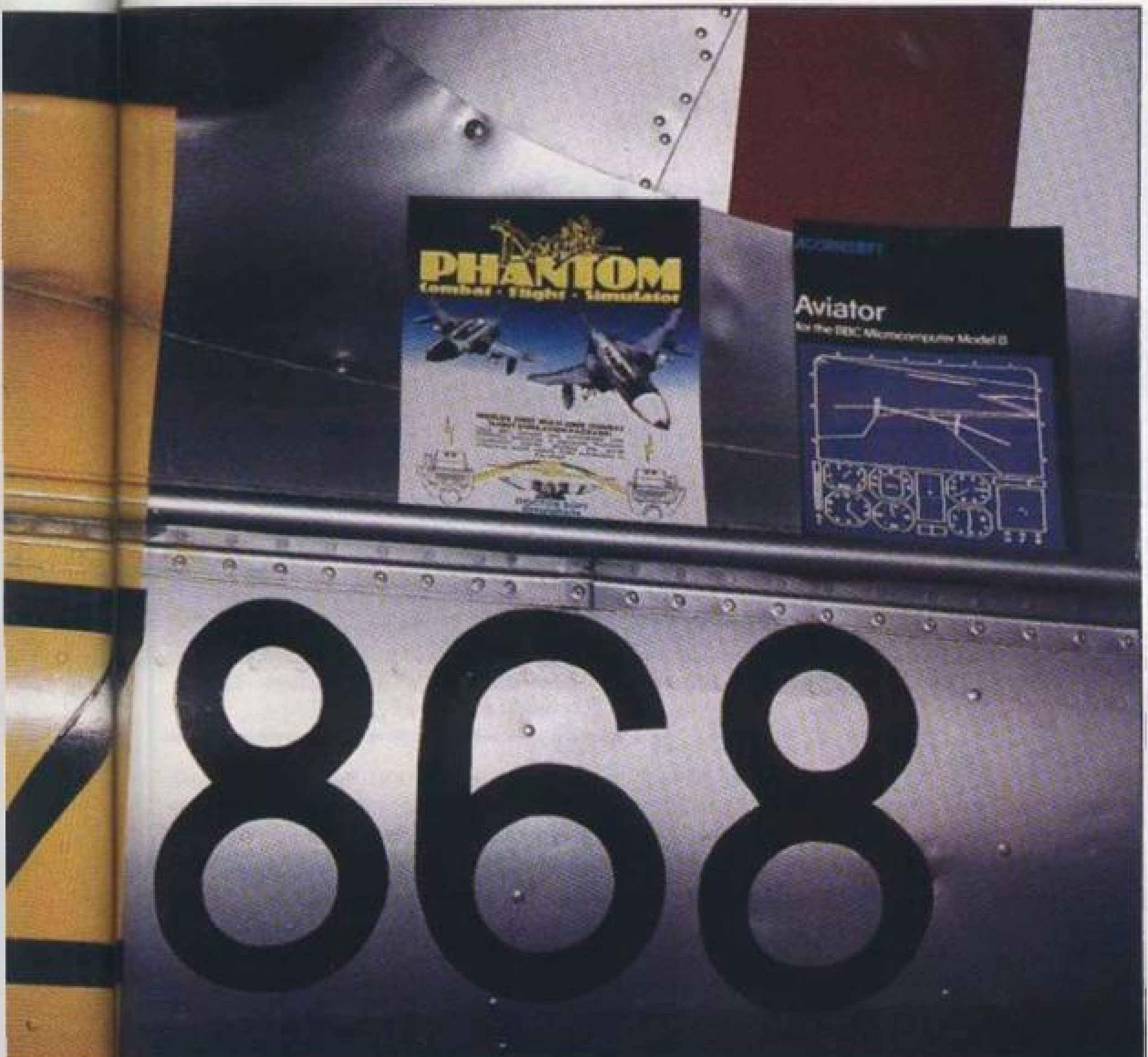
If even this level of stimulation is inadequate, you can select a bizarre game scenario in which your neighbourhood is invaded not by the Heinkel bombers you might expect, but by mysterious alien giant cockroaches. These grow in the outlying meadows and eventually take off, drifting langorously towards the town. Let one through and your fate is sealed. Since they take no evasive action and steadfastly refuse to return fire, the giant roaches are easy to shoot down, though Aviator does recreate one aspect of aerial gunnery usually neglected by programmers. Fast though a bullet is, at a range of a mile or more you have to aim quite a long way ahead of a target moving across your field of vision. The imaginary guns supplied by rival programmers all seem to transcend physics with a muzzle velocity of light speed.

It is a great shame that recent developments at Acorn have left this product out in

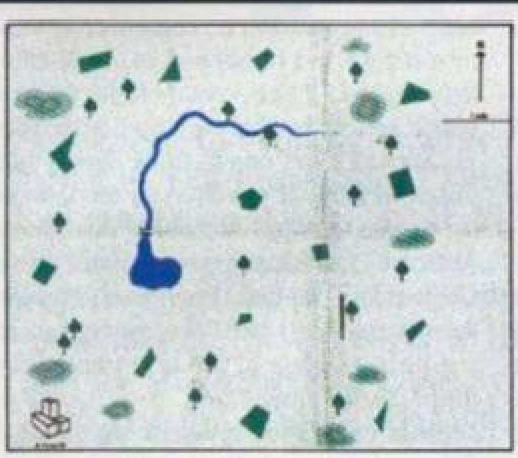


the cold. It runs only on a standard BBC Model B, mainly because of its convoluted copy-protection. There are no plans to release a BBC Master or Compact version, so if you have just bought your BBC you are likely to be out of luck. Despite the unglamorous monochrome wire-frame graphics and the extreme silliness of the monster plague game scenario, Aviator is an all-time classic with a wonderfully responsive and realistic feel.

Another particularly fine product for BBC Micro owners is Doctor Soft's *Phantom Combat* simulator, which is available as a single-user package or for two competing players using one computer each, linked by a ribbon cable connecting the BBC user ports. The Phantom simulator is a great improvement over Doctor Soft's earlier Boeing 747 simulator, which exhibits some rather strange and unrealistic responses. The Doctor Soft Phantom does not behave exactly like the rather idiosyncratic McDonnell Douglas F4, which might sound like a bad point but actually makes life a lot easier. On this version, the ailerons work right down to the stall, for instance, and it is impossible to break the wings or suffer an accelerated stall. The thrust-to-weight ratio at low level is better than 1:1, enabling you to accelerate vertically upwards. In character then, the Doctor Soft F4 resembles a



● **Far left: the world of Aviator. The aircraft belong to the Russavia Collection and the Imperial War Museum, Duxford Airfield, Cambridgeshire.**

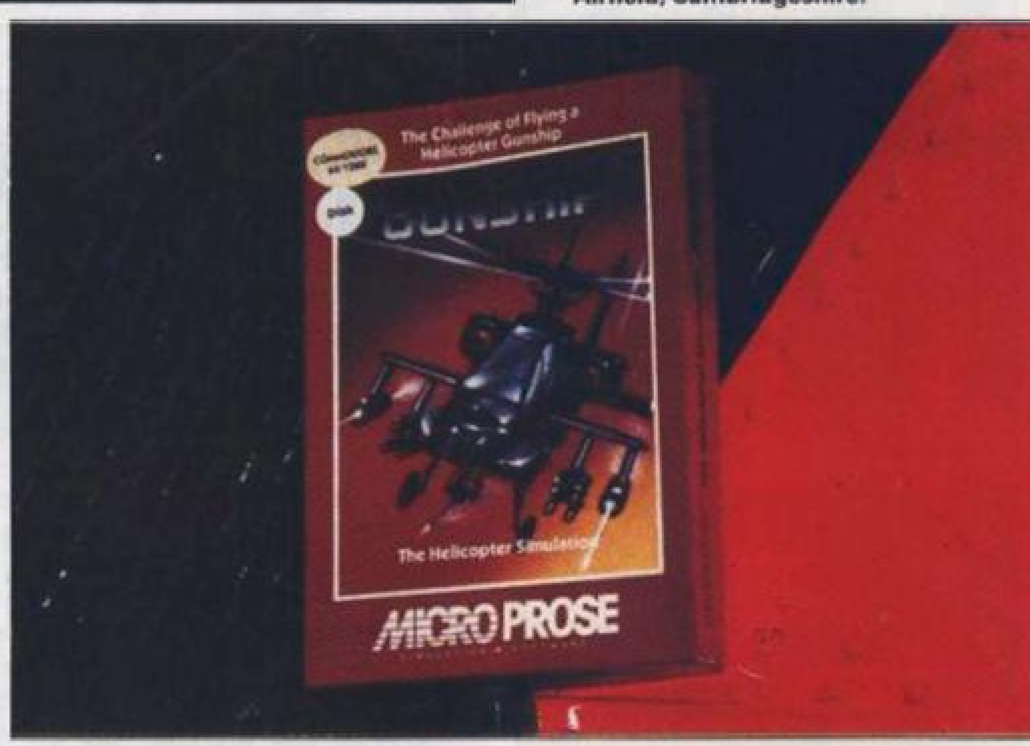


modern fly-by-wire jet like the F16 rather than the ageing warhorse the Phantom really is. The statutory bolt-on video game is in the form of an attacking enemy fighter. These are easy meat in the early stages but quickly develop some clever tactics as you rise to the challenge.

The two-player version, *Double Phantom*, is sold as a separate package, though existing owners of the stand-alone simulator get a discount on other Doctor Soft products if they order direct. Occasionally it is claimed that a software product sells the computer on which it runs. Normally this claim is an excess of public relations zeal, but in the case of Double Phantom it was true for me. I bought a second-hand BBC to complement my existing one purely so that I could run the two-player version. This puts one pilot directly against the other, using radar and visual contact to home in for a kill. A particularly nice touch is the progressive degradation of the aeroplane as you take hits. You might lose power, suffer control restrictions or lose a key instrument like the artificial horizon. Damage might not be apparent until you return to base, when the undercarriage or flaps refuse to operate on final approach.

A Commodore 64 version based on the Tornado is due to appear soon, though it remains to be seen how well Doctor Soft can deal with the handicap of the switch-type joystick. Doctor Soft's next development will be in the 68000 market, catering for Atari ST and, we hope, Amiga owners. The company regards the IBM PC specification as pedestrian in comparison.

Doctor Soft's Commodore offering will have to compete with a well-established contender on the lower-priced home computers, *Fighter Pilot* from Digital Integration. This program originally appeared on the 48K Spectrum and was quickly converted on to the Commodore 64 and Amstrad CPC. Fighter Pilot is definitely a flight simulator rather than a video game about aeroplanes. We understand that the author, D K Marshall, has experience in writing software for full-size training simulators, which obviously gave him a head start in planning the algorithms. The machines on which it runs are limited to switch-type joysticks but it copes surprisingly well with this handicap. The aeroplane being emulated is the McDonnell Douglas F15 Eagle, which encourages an extrovert brute-force flying style anyway, so subtle control adjustments are not really missed. As in the Doctor Soft Phantom, the numbers involved are big and spectacular. Top speed is well in excess of twice the speed of sound, and the rocket-like rate of climb is exhilarating.



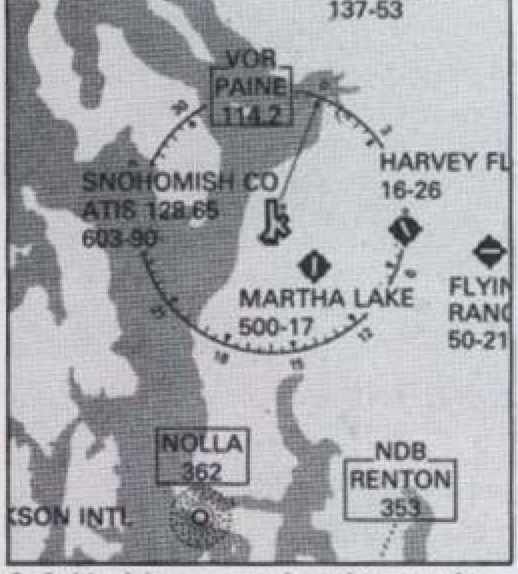
If you get bored with zooming around from base to base, you can select a combat mode which is based on the F15's real-life role as an air defence machine. Enemy bombers attack your airfields one at a time in high-level bombing runs. The mission ends when you are shot down or you run out of undamaged airfields at which to refuel and rearm.

Colour is used to good effect considering the humble specification of the Spectrum, the machine for which the program was originally developed.

Two releases which have done well in the market recently are *Strike Force Harrier* and *Spitfire 40* from Mirrorsoft. Both are designed to give the player an enjoyable game. Purist flight simulator addicts are likely to be disappointed.

Spitfire 40, for Commodore 64, 8-bit Ataris and MSX machines, has particularly good graphics for its instrument panel and outside view. Unfortunately you have to view one or the other – the space bar toggles between the two displays. This is extremely unhelpful, particularly as there is an inevitable lag when switching from one display to the other. The dynamics of the aeroplane are also questionable. You can raise the nose slightly, flick into a vertical bank, and the aeroplane crusies serenely on instead of following a ballistic curve downwards. It is still fun to play, shooting up enemy Messerschmitts, but too heavily biased towards the arcade-game market to be considered as a faithful simulator.

Strike Force Harrier shows similar limitations on the BBC Micro. The screen display is again highly impressive, with good use of colour, but having all this detail in view makes it slow to update, with the result that rapid manoeuvring is accom-

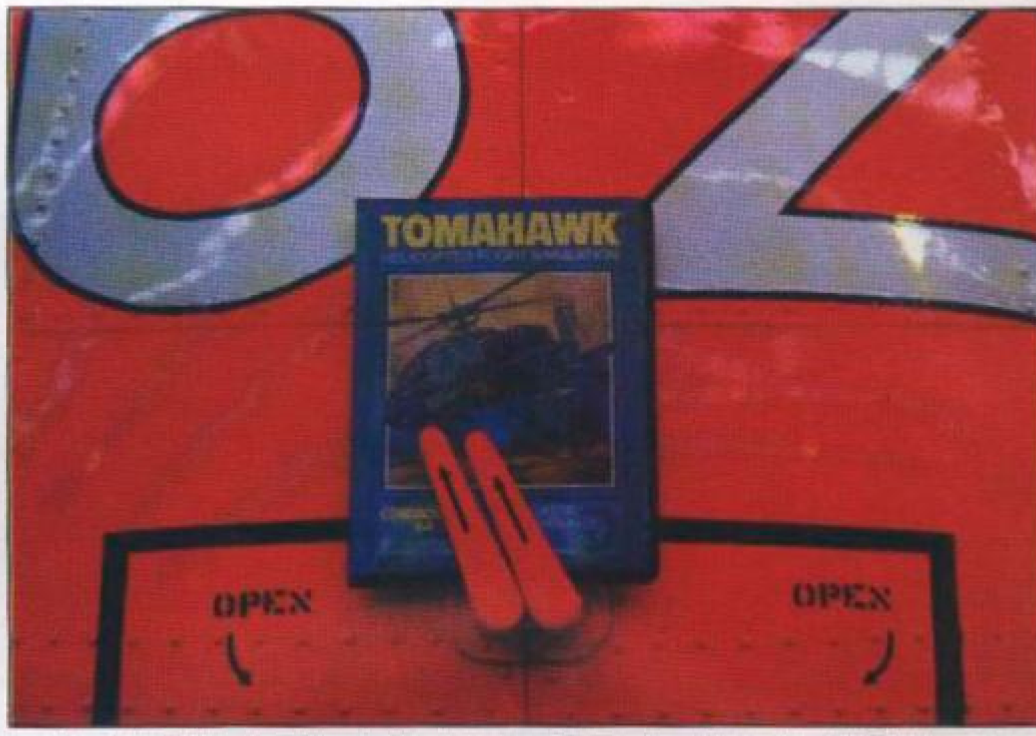


● **Sublogic's maps are based on genuine aviation navigation charts.**

panied by jerky movement of the scenery. The gameplay is compelling, however, with a tough strategic battle against enemy air and ground forces to test yourself against.

On the Atari ST, Strike Force Harrier is transformed. The ST has the horsepower necessary to keep the graphics flowing smoothly, and Mirrorsoft seems to have developed the dynamic algorithms much more thoroughly on this version.

The only product keeping Strike Force Harrier from the position of being the leading Atari ST flight simulator is the latest version of FSII by Sublogic, which was reviewed in the March issue of *Your Computer*. Giving this program the same name as the earlier incarnations of FSII is an act of considerable modesty. It represents as big a step forward from the Commodore 64 FSII as that product did from the original Apple II flight simulator from Sublogic.



● **Tomahawk is well established – can Gunship catch up?**

Keyboard control, the old bugbear of the Sublogic simulations, is still available, but for rapid manoeuvres mouse control offers much better response. Since the mouse can be moved instantly to any control position, it is almost as good as an analogue joystick once you have acquired the feel. The program now gives you the option of flying a high-performance Lear private jet as well as the traditional Cessna. Also provided as standard is a Phantom Combat-like ability to link two machines via an RS-232 link or a modem. In theory, this means you could practice flying in formation with a friend half-way across the country, using the telephone line for communication. In practice, however, the British telephone network is not really good enough to cope with the high baud rates desirable for such an operation. American ST users are in a better position.

The Commodore Amiga version is substantially similar, but eliminates the one remaining niggle of the ST version. Sublogic has always stored the detail of its scenery on disk overlays, and the ST periodically stops processing while it loads another section. The Amiga's multitasking capability lets it load in the next chunk of scenery while keeping the simulation running. Perhaps in a future release, Atari 1040ST owners at least will be able to load the whole contents of the 720K disk into memory at once.

Helicopter simulations have only recently come into vogue. Dutch software house Aackosoft publishes a crude offering called *North Sea Helicopter* for MSX. It is slow and ponderous, with little to commend it. The company's MSX-2 version looks much better but the absence of MSX-2 hardware on this side of the Channel removes it from consideration.

Tomahawk, from Digital Integration, shows many of the qualities of Fighter Pilot. Despite its name, the program simulates the Hughes Apache attack helicopter, as does its newly-released rival *Gunship*. These two will be compared in depth next month, but Tomahawk is a well-established and highly competent program which will be hard to dislodge. Although it is available on most 8-bit home computers it is most effective on the machine for which it was originally written, the Amstrad PCW. Gunship is available only on Commodore 64 disk at present, though a version for the Atari ST is eagerly awaited.

Given the state of the art in home computer flight simulation, how useful are these programs to someone with real-life flying ambitions? For giving an initial impression of aeroplane controls and basic principle of flight, Aviator on the BBC Micro is hard to beat. The later releases of the Sublogic Flight Simulator II are a close second, but if you use an IBM PC-compatible try to get the very latest version which includes the option of mouse control. Amstrad PC owners should find this particularly relevant.

The radio navigation systems on the Sublogic simulators are particularly helpful for pilots wishing to keep in practice without spending a lot of money. The range of machines on which FSII is available makes it a worthy choice in any case.

If, on the other hand, you want raw excitement and the thrill of combat, Doctor Soft's Phantom Combat and Fighter Pilot from Digital Integration are the ones to try.

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April 1987 *Your Computer* **Offer closes August 1987**





Deluxe Paint II is one of the few packages to stretch the Amiga. David Bishop reports.

POLISHED PERFORMER

When Commodore launched the Amiga in 1985 it was greeted with gasps from the public and squeaks of glee from programmers. But whether it is as a result of the years in which programmers have had to continually look over their shoulders at 'out of memory' messages, or merely a case of them being over-awed by the new processing and graphical power at their disposal, the sobering fact of the matter is that the Amiga has so far been dealt a short straw by software houses.

Fortunately there are always exceptions to any rule, and in this case it turned out to be Electronic Arts who committed themselves heavily to the Amiga, even before its launch, by which time they were already well into the development of a whole range of packages for the new machine.

One of their most impressive early releases for the Amiga was Deluxe Paint, written by Dan Silva who had joined Electronic Arts in 1983 to develop Prism, an in-house graphics tool for software development.

As Prism took shape, the potential appeal of a commercial version became apparent. So, in November 85, Deluxe Paint was released. Not content with this, Silva immediately started work on DPaint II which was launched in the States late last year following a further years development.

DPII boasts many features not available in DPI, while many of the original features have been made more powerful and versatile or easier to use.

Once the program is loaded, a window appears inviting you to select screen format, number of colours, and page size. The default settings are low resolution, 32 colours, and screen size page (the only settings available in DPI), although you can change any of these to suit.

The four screen formats available are quaintly termed Lo-Res, Med-Res, Interlace and Hi-Res. Lo-Res gives you a pixel array of 320 x 200 and 32 colours with 512K of memory. Med-Res uses a pixel array of 640 x 200 and 16 colours.

The Interlace format uses a technique where the display is made up from two video fields, each containing half the lines of the image. These fields can then be interlaced to give a display with a greater number of lines, increasing the resolution. Unfortunately the interlacing process causes a flicker which can be minimised by reducing the contrast and colour settings or by buying a high-persistence monitor. The interlace format allows up to 32 colours on the screen.

Hi-Res offers a pixel array of 640 x 500, but because this format also interlaces the horizontal lines, it is subject to the





● **These sample pictures which are included on the distribution disks give the ambitious something to aim at.**

same flicker as the interlace mode. The Hi-Res format allows up to 16 colours on the screen, but only with a memory upgrade. If you select a number of colours that would exceed your available memory, DPII adopts the format you have selected but uses fewer colours.

DPII lets you change formats without losing the screen image. Although pictures change shape as you move between formats, due to differing pixel dimensions, this can be overcome by using the double and halve brush commands. It is, however, advisable to save your picture beforte changing formats in case a memory or format limitation causes your palette to be changed unintentionally.

The Set Page Size window allows you to select from three preset page sizes or configure any other page size up to 1008 x 1024 pixels. The 3 preset pages are: Standard (the default setting of 320 x 200), Full page (320 x 340), and Full Video (352 x 226). Full page allows you to work on a canvass which, when printed out, will be A4 in size. Full video gives a full-screen display with no border. This is particularly useful for professional applications. Where the page size is larger than the screen, you have to scroll around until the part you want to work on is visible.

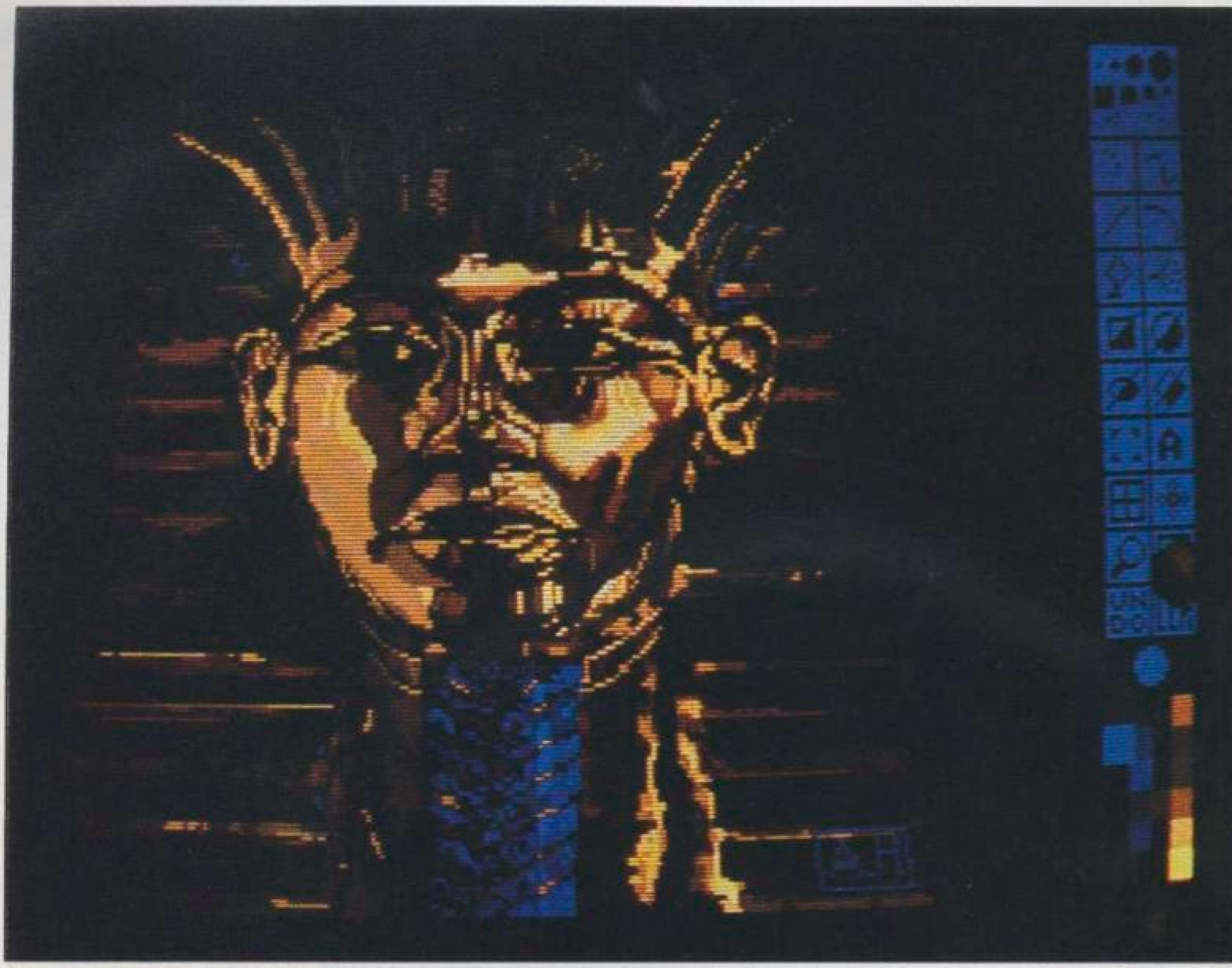
Having selected the screen format you are presented with a blank screen. On the right hand side is the toolbox which contains many of the features most commonly used in DPII. These include built-in brushes, continuous and dotted freehand drawing, straight and curved lines, fill, airbrush, geometrical shapes and polygons (filled and unfilled), brush selector, text, grid, symmetry, magnify and zoom, undo and clear. Many of these are standard art package options although some may need further explanation.

At the top of the toolbox are ten pre-defined brushes of varying shapes and sizes including five squares, two circles and a cross. With brushes, as with many tools in the toolbox, clicking on the right hand mouse button allows you to modify some fundamental aspect of that tool. Here you can alter the size of any of the built in brushes by simply clicking on the brush and dragging the cursor across the screen.

Below the brush box are two freehand drawing icons, continuous and dotted. Continuous freehand drawing is just like using a pencil and paper. The only limitation is that, because the program tries to follow your every movement with the mouse it sometimes can't keep up with you, so this option is better suited to slow, methodical work. Dotted freehand, however, allows fast freehand drawing, making it ideal for sketching out a shape. The only thing to remember here is that the faster you go the larger will be the gaps between the dots.

All art packages make it easy to draw straight lines, but DPII is unusual in offering help also with curves. Curves are drawn by grabbing one particular point along a straight line and pulling away until you get the desired curvature.

The airbrush feature allows you to spray with a single or multi-colour can and even lets you spray with a predefined brush. Airbrush tips and nozzles can be adjusted to give different spray shapes. ▶



The symmetry function lets you draw a number of identical images at the same time. As you move your brush around, all the other images move at the same time just like a kaleidoscope. All the images you create are produced about a fixed point which can be moved to any location on the screen via the symmetry window.

The symmetry window is also used to select cyclic symmetry. With this you specify the number of clones to be produced from your original brush. These are then arranged in a circular fashion about the centre of symmetry. An option called Tile lets you draw with a number of brushes at the same time, but without mirroring them about a central point. This makes it easy to create groups of identical images in a regular pattern.

The cursor can be set to snap to the co-ordinates of an invisible grid, the dimensions of which can be altered to fit your requirements. Thus, using the Grid and Freehand Dotted tools together, you could very easily fill the screen with a regular polka-dot pattern for example.

The Zoom and Magnify tools have been upgraded from DPI to allow you to scroll around the screen while still in Zoom mode. You can also carry out functions on both the magnified and normal scale portions of the screen without having to flip between the two modes. Using DPII's highest magnification, you can work on pixels 400 times their original size!

In DPII, anything from a single pixel right up to a full screen can be a brush. The brush selector icon in the toolbox lets you create a brush by cutting out a shape from an existing picture. Normally this is done by making a rectangular cut, but by double clicking on the mouse, you can cut out an irregular shaped brush from a crowded background using the Corral feature.

As with DPI, brushes, once defined, can be stretched to any new shape, halved or doubled in size about either a vertical or horizontal line, flipped over horizontally or vertically, rotated by any number of degrees, and even sheared off to the left or right.

Brushes can be thought of as mini pictures. Just like a normal picture, they can be saved to disk and they even have their own palette. This means that you can cut a brush from one picture, transfer it to second which is using a different set of 16 or 32 colours and force the second picture to adopt the palette of the original picture from which the brush was cut. DPII comes with a number of brush files on disk including one entitled 'Fireworks' which is the subject of one of the tutorials in the manual used to illustrate colour cycling. In DPI you can define ranges of colours through which a brush will cycle as it used for painting. So by moving the fireworks brush around the screen it changes colour every time it is redrawn giving a beautiful multi-colour explosion effect.

Another improvement over DPI is found in DPII's Perspective command which lets you

● A picture which never fails to impress, Tutenkahmen's death mask.

rotate a custom brush about any of the axes of three-dimensional space. This means you can create a new plane of operation other than the 2D screen, and then create perspective effects on your newly created plane.

A dramatic application for the perspective feature is when it is used in concert with the fill command. First make a brush of, say, the famous



mask of Tutankahmun. Now put it into perspective so that it is effectively tilted 45 degrees away from you. It is worth noting here that another new feature 'Anti Alias', allows you to smooth out any jagged edges resulting from the perspecting of brushes. Now click on fill and – hey presto! instant King Tut wallpaper fading off into the distance getting smaller, in perspective, as it goes. This feature alone will be enough to persuade most DPI owners to take advantage of Electronic Arts' upgrade offer of $30.

One feature in particular, the Gradient Fill, makes DPII a viable alternative to the traditional airbrush. You can now fill a defined area of the screen, say a circle, in such a way that the circle assumes the appearance of a sphere. First draw a circle as you would with any art package. Now call up the palette window from where you can specify which colours are to be included in the gradient fill. Define the colours you want at either side of the gradient (say dark and light blue if you want to draw a blue sphere lit from the side by white light). Click on the Spread function and DPII looks at the first and last colours in the spread and at the number of steps between, then calculates a series of intervening shades.

Having set up your colour range, go to the Fill Type window from where you can select from three different gradient fills. The first two allow you to fill with the gradient up/down or left/right. The third option creates a three-dimensional effect by filling each horizontal line independently, thereby allowing the gradient to fill the contours of the shape being filled. This third option will give the best effects here. The final setting is the Dither control which dictates how much overlap there is between each shade in the range. Having done this, return to your picture, click the fill cursor in the circle and sit back in amazement.

Airbrush artists use stencils called *friskets* to cover certain parts of their work while they airbrush other areas. The making of friskets is a tricky and sometimes time-consuming business, but life is a whole lot easier in the world of computers. With DPII, making a stencil is as easy as defining the colours you wish to 'lock up' so that they become impervious to any painting until you switch the stencil off again.

One of the advantages of using the Stencil option is that a picture can be painted backwards, starting with objects in the foreground which can then be stencilled out while you concentrate on more distant objects.

Of course, there may well be times when you would have preferred to define a stencil by area rather than by colour. No problem, you can do that too. At any time you can lock up the current picture to which you can then return by simply clicking on 'Clear'. It is rather like saving successive positions as you progress through an adventure game. You can then go on and experiment to your heart's content, safe in the knowledge that you can return to the last saved position with impunity.

Other uses to which this feature can be put include the ability to make backgrounds over which children can then draw or move shapes around. They can wipe the slate clean and



start again whenever they please but the background fixing can be combined to give an even more flexible environment in which to experiment with your picture.

In case you're worried about getting bogged down by too many features, don't panic! DPII comes with a large well written manual that will lead you as gently or as fast as you want into the intricate depths of the program, offering you lifelines at every stage in the form of well thought-out tutorials.

Deluxe Paint II is fully compatible with other products from Electronics Arts' Deluxe family including Deluxe Video and Deluxe Print. Electronic Arts has also released the first in a series of Deluxe News Data disks featuring a collection of more than twenty impressionist paintings digitised into 32 colour IFF images ready to use with DPI or II. Watch out too for Deluxe News, sent free to all registered Deluxe product owners.

Deluxe Paint II is a fine example of a good program made better by listening to the comments of the people who use it.



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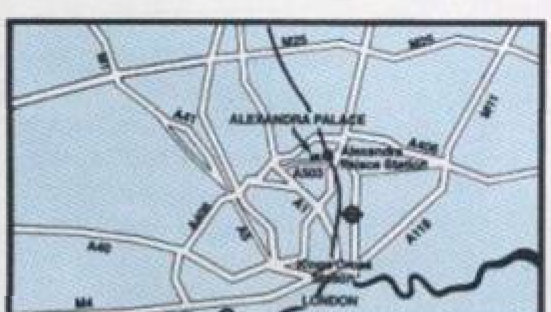
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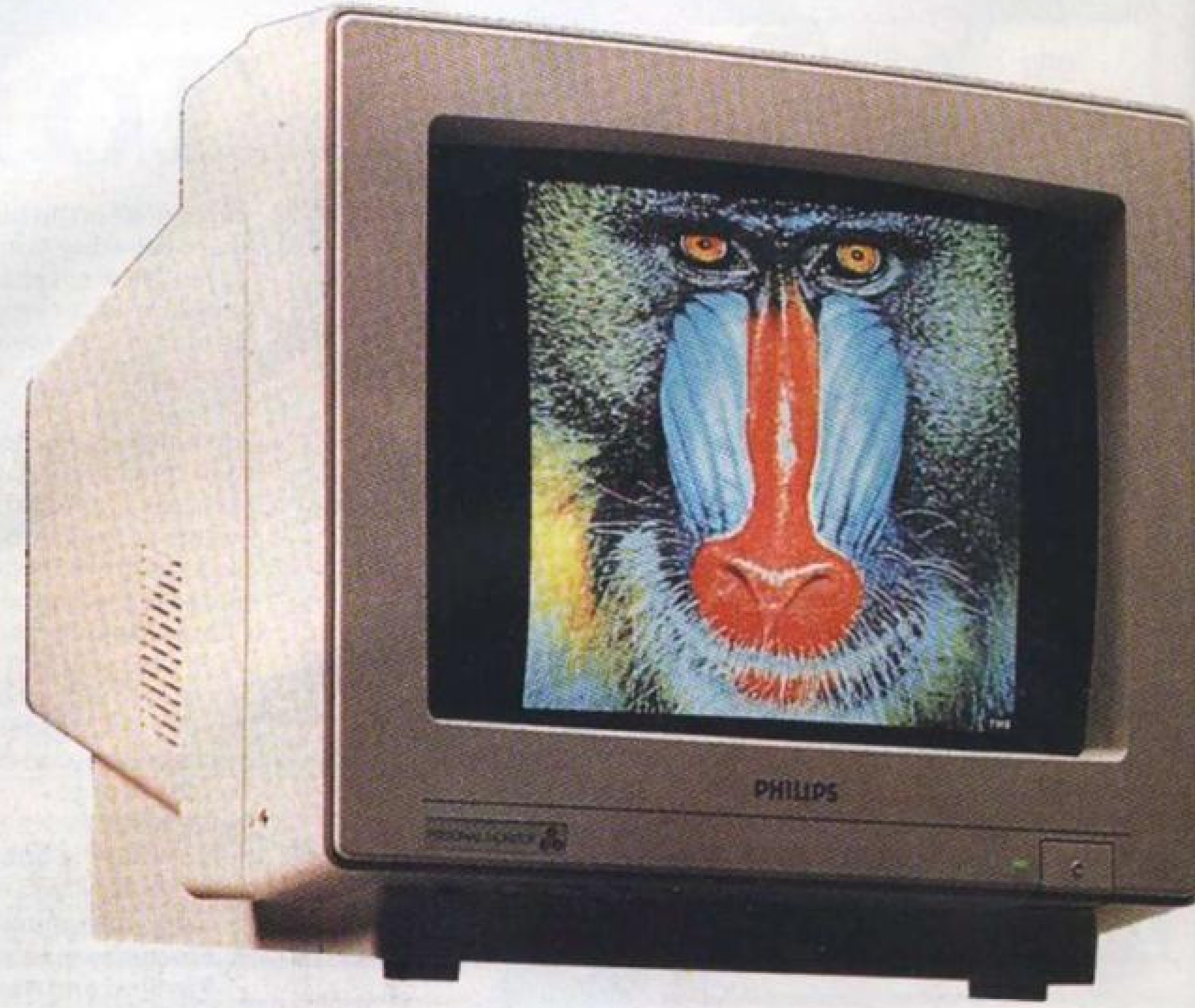
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IMPROVE YOUR IMAGE

Buying a colour monitor takes pressure off the family television set, but at substantial cost. Philips has a hi-tech compromise.

If you are really serious about computing, you rapidly reach the point where you can no longer cope with viewing your computer's beautiful high-resolution 32-colour 80-column display through anything as mundane as a domestic television. The humble idiot's lantern blurs your text, washes out your colours and makes your graphics wobble and flicker.

Taking your second aspirin of the evening you don your trendy polarised sunglasses and retire to a soothing darkened room, vowing to buy a decent monitor as soon as possible. After all, using a television as a VDU has an adverse effect on your image as well as that of the computer. You dare not let your friends catch you at it. It's almost as bad as being seen loading a program from cassette.

A good colour monitor is expensive. This Philips CM8833 retails at £339.00, but monitors are definitely a case of getting what you pay for.

With this monitor you can be sure of getting a good display from almost any serious personal computer. The CM8833 can be connected to any machine producing linear RGB, TTL RGB or composite video signals. Unusually for a computer monitor it also has a loudspeaker. Many computers produce their sound effects via on-board speakers so that mute monitors can be used without penalty. The BBC Micro and IBM PC-compatibles are common

examples. The trend is towards sound output from the monitor, however.

Once you have made this kind of investment, though, the few occasions when you are able to tear yourself away from the wonderful computer display to watch *EastEnders* become strangely unsatisfying. You can't help comparing the poor colour saturation and wavering image of the family television with your crisp, rock-steady graphics and text. Is there a solution?

If you have a video recorder, hooking up the monitor to that will provide an immediate improvement. The signal broadcast by the BBC is now being decoded by the tuner inside the VCR into composite video and squirted directly into the monitor. Previously the VCR was turning the composite video signal back into RF and the internal workings of the television set were then turning it back into composite video to display on the screen. With all this simultaneous translation going on, it is hardly surprising that the picture was so muddy.

Being a perfectionist, though, you are still not satisfied. The TV tuner inside the video recorder is built down to a price, and does not give optimum results. Another drawback is that the monitor has no tuner of its own, so you are unable to watch one programme while recording another.

Enter the Philips AV7300. This unassuming little beige box is a £70 TV tuner of particularly high quality. By plugging this tuner into your up-market video monitor you turn it into a television set of superb clarity.

The AV7300 is disarmingly small. It makes your realise how much empty space there must be inside the average television cabinet. The front panel holds an on-off switch (confusingly labelled *computer/TV*) and twelve station pre-set buttons. Behind the row of buttons lies a flip-up panel which reveals the fine tuning wheels for each pre-set and the AFC selector. At the back there is a standard antenna socket and a pair of output leads, one for composite video and the other for sound. The AV7300 you buy in the shops comes complete with a small V-shaped aerial, but our review sample was supplied without. If you live in a poor reception area, you are likely to get better results with an after-market antenna, anyway. It would be a shame to put together a system of this potential and handicap it with a poor signal.

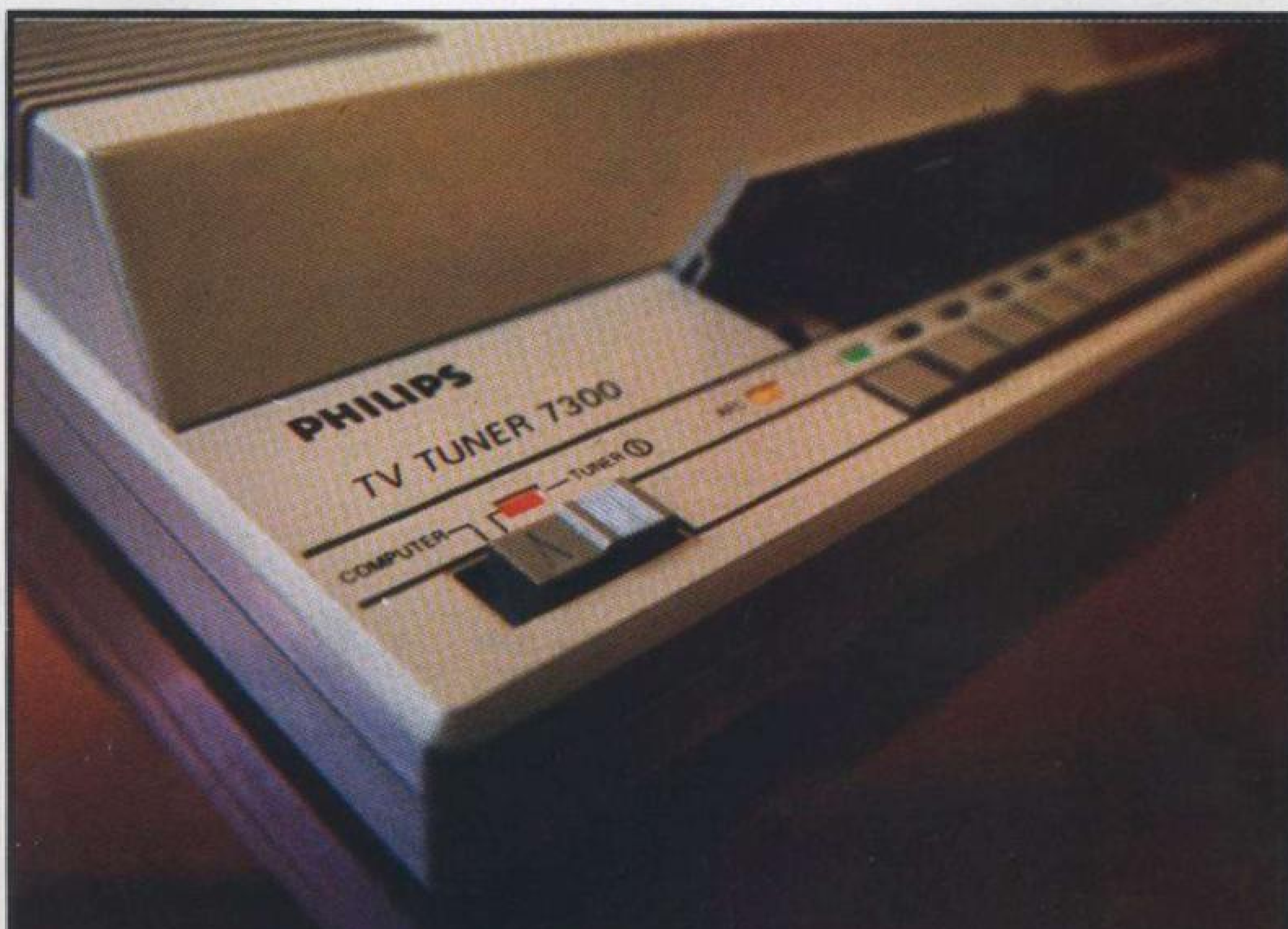
Philips would naturally prefer you to connect the AV7300 to one of its own monitors, but it works very well with other monitors which have composite video input and a built-in speaker. The natural place to locate the tuner is on top of the monitor but, small though it is, the AV7300 does not sit happily on the narrow flat ledge at the top of the CM8833. The editorial Microvitec, an imposing boxy flat-top affair, provided a much more stable base.

Incidentally, you do not necessarily have to use a colour monitor. Experiments with an amber Zenith monochrome display produced some unusual, though quite watchable effects. The twentieth re-run of *Casablanca* has a compelling period feel when viewed in tasteful sepia tones.

The two outputs from the tuner are standard phono plugs which go straight into the Philips monitor. To use it with other makes you might have to resort to a certain amount of fiddling about with wires and connectors, but the connections involved are simple enough to perform. Nothing took us longer than about ten minutes to assemble.

You might be quite happy with your present television viewing arrangements. Nevertheless, television can be like hi-fi – once you experience a higher level of performance, you will wonder how you ever lived with anything as crude as your previous equipment.

- **Above left: the fiendishly compact AV7300 tuner. Below: the CM8833 all-singing all-dancing monitor with linear and TTL RGB, sound and video.**





DEJA-VU

TEXT ADVENTURES ARE NOT THE ONLY KIND. STEVE APPLEBAUM EXPLORES A GRAPHIC WORLD

Imagine yourself in a sleazy bar in the cheap end of town. The stale smell of last night's cigarette smoke still hangs in the air. You must have had a skinful last night because you can't remember a thing about the whole evening.

Come to think of it, you can't even recall coming to Joe's bar yesterday. And another thing, why weren't you thrown out with the other bums at closing time? It's time to get out of here and crawl into a cup of coffee back home. That's if you can remember where home is, and more importantly . . . who you are. This time you swear you'll never touch another drop.

Grabbing your coat, you quickly check that nothing is missing from the pockets. Nope, it's all there including your wallet, thank God. In the cold light of day this place gives you the creeps, but there's not harm in having a snoop around, and maybe they've got a coffee machine someplace.

Nobody crosses your path downstairs, but the doors are locked. There might be a duplicate key hanging upstairs in one of the offices. Better find it rather than force the door. On your way up the stairs you see three pictures of boxers that seem strangely familiar. A nagging feeling, buried deep in your subconscious, tells you you're in trouble, but what kind of trouble?

Oops! . . . big trouble, that's what kind. What's that body-shaped thing slumped over the desk, and why does it look so blue? One thing's for sure, nobody's gonna believe you had nothing to do with this stiff's acute deadness, unless you can come up with some pretty convincing evidence to pin on somebody else – that's if you can stay alive long enough to find it.

There are very truly few original games. Ultimate's *Knight Lore* and Firebird's *Sentinel* could be included in this selective list, but they have now been joined by an adventure game guaranteed to raise even the most sceptical eyebrow.

Quite simply, Deja-Vu is an adventure game requiring virtually no text input. Although you might expect this to impose limits on complexity and flexibility, in fact exactly the opposite is true.

The game is played using a set of eight action icons housed in a window at the



top of the screen, which are accessed by a cursor controlled by the mouse. The actions (Examine, Open, Close, Speak, Operate, Go, Hit, and Consume) are all that are required to complete the game, but it is the way in which these icons can be used that makes this adventure special.

At the start of the game, you're in the loo and you can see your coat hanging on a hook on the door. A an empty Gem-like window labelled "self" is positioned on one side of the main screen picture. This window is your graphical inventory. Move the cursor over the coat and press the button on the mouse. Then drag the cursor back towards the inventory window. Amazingly the coat is now moving across the screen under mouse control, and it can be dropped into your inventory simply by letting go of the button while it is over the window.

Once you have the coat, what's next? Click on the "open" icon and then on the coat and another window springs into existence, this time labelled "coat". Inside this second window can be seen graphical representations of all the objects in the coat pockets. One particular item catches your eye – a wallet. To see inside the wallet repeat the "open" process and a third window will appear.

The same method can be used to transfer objects to and from different windows, or back to the main location graphic. For example, you might open a drawer and discover a key. If you grab the key from the drawer window and deposit it in your inventory, then close the drawer, the window disappears and nobody is any the wiser.

There is no limit to the number of windows that can exist on the screen at the same time, although it is advisable to close any that you've finished with for the time being, otherwise things can get a trifle unmanageable.

Even before you have a chance to appreciate the design elegance of Deja Vu you will be impressed by some of the neatest monochrome graphics seen in an adventure. A total of over 40 locations are beautifully depicted in photo-like realism, courtesy of the high resolution Macintosh screen and some high-quality artistry.

In your attempts to prove your innocence and somebody else's guilt, you experience the claustrophobia of crocodile-infested sewers and take cabs to five parts of the city including Joey Siegel's place and your own apartment. Along the way you will inject yourself and others with various chemicals including a truth serum and find a bound, gagged, and extremely fat lady in the boot of a beautiful old Mercedes.

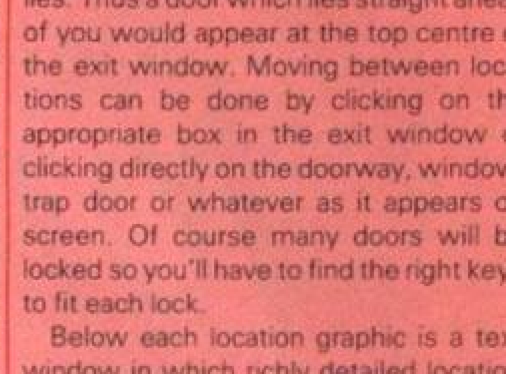
Each location you visit is packed full of objects for you to manipulate. Even if some are too large to put in your inventory they can still be moved around the screen. A classic example of this is found in the mansion where a married couple, your two prime suspects, are upstairs in bed asleep. Although you can only see their heads and shoulders, by picking them up like the coat you tried earlier you can drag them out from under their bedclothes and see their pyjamas and nightdress as their whole bodies float around the room under mouse control.

Another beautiful touch in Deja Vu is that elements of the location graphics with which you are interacting will visibly change at the appropriate moment. Thus a door may be seen open, closed, or even shot to pieces should you decide on a less subtle entry technique. Another elegant example can be seen whenever you encounter a particularly persistent mugger who crops up with monotonous regularity later in the game. He can be bought off but try socking him in the eye instead, he'll disappear only to return later, this time sporting a very respectable black eye.

All available exits from your current location are shown in another window, normally positioned to the right of the location graphic. Each exit is shown as a small box whose position within the window shows the direction in which the exit lies. Thus a door which lies straight ahead of you would appear at the top centre of the exit window. Moving between locations can be done by clicking on the appropriate box in the exit window or clicking directly on the doorway, window, trap door or whatever as it appears on screen. Of course many doors will be locked so you'll have to find the right keys to fit each lock.

Below each location graphic is a text window in which richly detailed location descriptions appear. A running commentary on the game also appears in the text window giving you supplementary information including the consequences of any actions taken.

Normally, only the last few lines of text are visible in the text window, but you can review earlier information using the scroll bar on the side of the window, or by increasing the size of the window. There is also a scratch pad feature which allows you to cut and paste relevant sections of text into a scrap book which can be reviewed at any time.



● **Left: the ST version. Above: the Mac screen.**

As with many Macintosh products, Deja Vu gives you the chance to alter the design and size of the font used in the text window.

Alternatives include Standard, Olde English, and Gothic. Font sizes range from eight to 14 point, and give a varying number of words per line and lines per inch in the text window.

Another option available from the status bar is a file-handling menu. This contains the commands you would expect, including Save, Save as, Load, and Quit. Only two game positions can be saved on the original game disk so it is wise to format a blank one before you start.

Deja Vu has an involving plot, superb graphics and a wonderfully simple user interface. It has been out in the States for some time and was launched here late last year by Mirrorsoft who hope to release the Atari ST version soon. A second, similar game, *Uninvited*, was launched on the Mac in America a few weeks ago and the third, *Biarritz*, should be ready some time this summer.

C for yourself

C IS THE PROGRAMMING LANGUAGE OF THE MOMENT. ADAM DENNING EXPLAINS WHY, AND COMPARES THREE C COMPILERS FOR CP/M COMPUTERS

The subject of computer programming languages is often discussed but rarely agreed upon; after all, we all know that Pascal is the best language – or is it Basic? No, it simply has to be Ada! Most professional programmers long ago decided that the easiest way out of this perennial argument is to come to the conclusion that the notion of a 'best language' is invalid. There is no best language *per se* just as there is no worst language. Except maybe Pascal, FORTRAN, Basic, FORTH, COBOL, Ada, assembler and C!

However, a fact of life is that the vast majority of existing 'DP' (meaning 'data processing' – accounts to you and me) programming applications are written in COBOL and, as it is extremely expensive converting from COBOL to another language, this will be the case for a long time to come. Another factor in this depressing scenario is the cost of re-training a company full of COBOL programmers to program in some other language, which is not even worth contemplating for the average DP company. So they don't.

Companies which write new software, though, and especially those which write software not intended for the DP market, tend to use almost anything but COBOL. It's encouraging to see that a great deal of these more modern programmers have taken to programming in C. C is one of a class of languages which are described as 'block structured', but as this term applies to almost any new language it doesn't help us to get a feel for what the language can offer.

You may have heard C described as "the systems programming" language, or as the "closest language to assembler" or, if the person describing the language to you is a fully-signed-up member of the COBOL programmers' club, as "the language no-one can understand". C is called a systems programming language mainly because it is favoured heavily by people who write systems programs (operating systems, for example). This does not mean that its use is restricted to those applications though. C may well be the closest language to assembler but that doesn't really mean much – it is the library provided with most implementations of the language which determines its true usefulness. We'll go into libraries a little later. As for the last comment, it is almost certain that the typical C programmer understands more about C than his COBOL-programming counterpart does about his chosen language. This is probably because C attracts a different (I won't say better!) sort of person.

Let's look into C's history to get an idea of why this may be. In the 1960s, Cambridge and London universities were collaborating on a block-structured programming language to be called CPL ('Combined Programming Language'). Unfortunately the project was unmanageable and the language too large, so the partnership broke up and CPL was not completed. Martin Richards, working at Cambridge, took the basic framework of CPL and re-thought a number of the premises on which the new language was to be based. Richards ended up producing a simple, block-structured language which has the power of a systems programming language yet the elegance and simplicity ideal in a teaching language. This language is called BCPL (Basic CPL) and numerous implementations of it are available for machines as diverse as the BBC Micro, the Sinclair QL, the Atari ST and the IBM PC. BCPL is used as a teaching tool at Cambridge University, its compiler being one of the easiest to implement. BCPL is also decidedly easy to learn so if you decide C is too much for you after reading this article, try your hand at BCPL.

BCPL has some flaws which many see as fatal. Consider Basic, as we're all familiar with that. Most versions of Basic will allow



you to declare normal (i.e. floating point), string and integer variables, and some offer even more. This classification of the variables (a program's data) into 'data types' – floating point, string and integer – enables a Basic programmer to write programs which treat different data in different ways. Floating point numbers (and integers) may be multiplied together.

for example, but you can't do that with strings. Strings can be joined together or searched for a specific character, but you can't do that with normal numbers as it simply doesn't make sense. Basic, then, is said to be a *typed* language as it allows the programmer to segregate his program's data into the various forms or types supported. BCPL, on the other hand, does not have this concept and is said to be an untyped language.

The consequences of this are that it is difficult to perform calculations on non-integer data as the language does not know what non-integer data items are. BCPL libraries are generally designed to alleviate the problem, but a COBOL programmer in particular would find the language most perplexing.

Having no types is not BCPL's greatest flaw, as it can be reduced to a matter of taste, or perhaps style, anyway. More serious is the fact that it is designed for a "word addressed" machine with a totally linear address space. All the machines we use as home computers are "byte addressed" machines which means that every memory address represents a byte of data.

The upshot of this is that a BCPL compiler needs to produce code which constantly multiplies and divides data addresses by the number of bytes in a BCPL word. As no-one in their right mind chooses to implement BCPL with a word-size of one byte, this means that a program written in BCPL is almost always less efficient, bigger and slower than one written in a language designed for byte-addressed machines, such as Pascal or C.

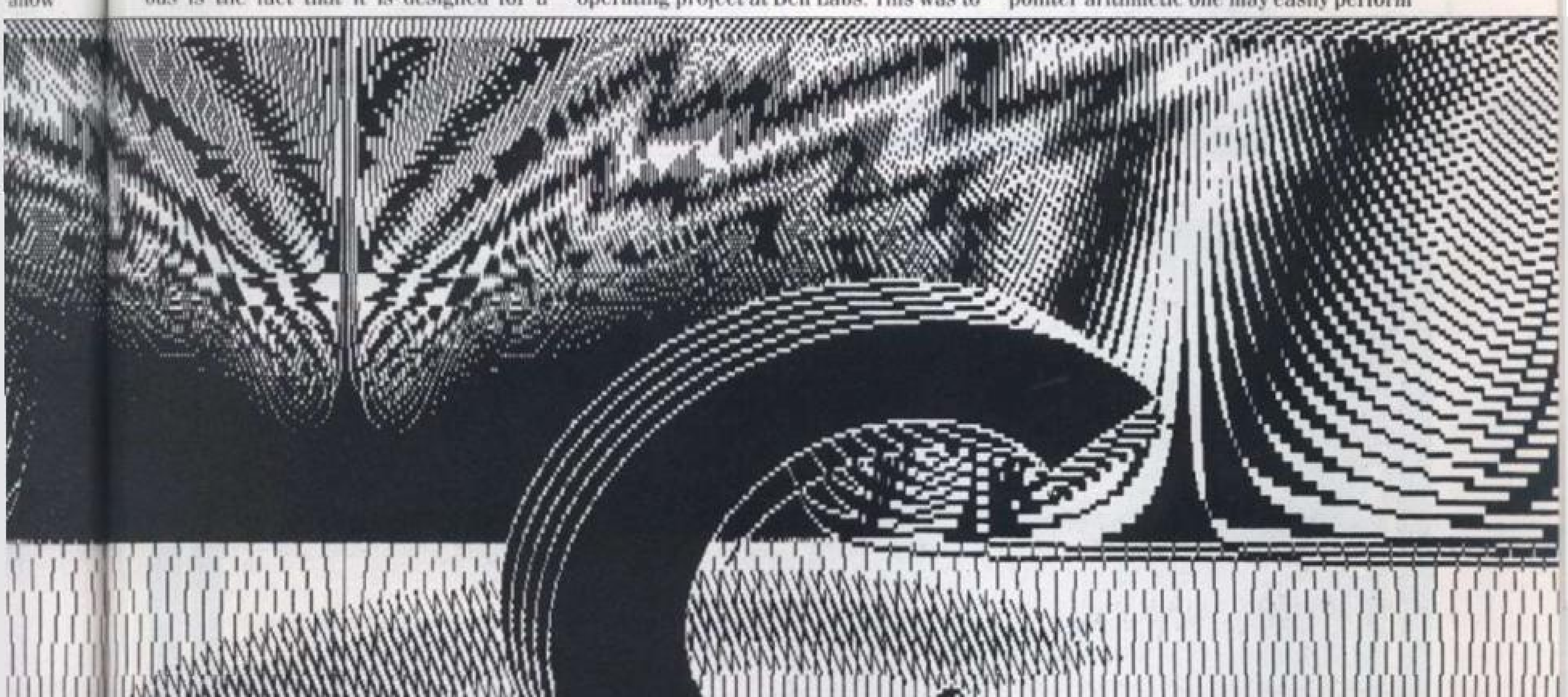
The effect may be minimised to a great degree by having a super-fast library but it can never be removed entirely without circumventing the rules of the language.

Denis Ritchie is the designer and implementor of the first C compiler and it was he who decided to design a language based largely on the principle concepts of BCPL but without its flaws. C was the eventual outcome and its success was assured as Ritchie worked for Bell Laboratories in New Jersey, part of the giant AT&T corporation.

At the time Ritchie was also heavily involved in a multi-tasking multi-user operating project at Bell Labs. This was to become Unix, which everyone has heard of by now. The fame of Unix has spread far and wide and as every Unix system comes with a C compiler, the language began to spread, too. Unix is almost completely written in C, with only a small assembler-coded kernel at the very heart of the system. The majority of Unix programmers write in C as the natural thing to do.

Originally C had something of a mystique as it seems at first glance to be idiomatic in the extreme. Once you have learnt the language, though, you begin to see it as a language with few restrictions and a clear method of usage. Programmers coming to C from languages like Basic and FORTRAN are likely to be most confused initially as the language exploits a few concepts which are virtually unused or don't exist at all in other languages. The two most prominent are *pointers* and *library*.

A pointer is an expression (such as a variable, or a variable plus an offset, or just an offset) which points to another variable. It is similar to a familiar concept, array subscription, in that a subscripted array represents a pointer to the relevant element of that array. Essentially, a pointer represents no more than the address of a variable, although through pointer arithmetic one may easily perform remarkably complicated computations on this address and its contents. Pointers are fundamental to C programming and every C programmer becomes very familiar with them early on, although just about everything which may be done with pointers may also be done using other, more conventional techniques. Pointers tend to produce faster and smaller code and often the ▶



programming process is more straightforward if you accept pointers as a way of life.

A library is a group of subroutines (called functions in C) which provide a large number of the facilities Basic programmers expect to be part of the language itself. For example, every Basic programmer will use the PRINT statement prolifically, knowing that it is a valid Basic keyword whose effect is to display its arguments on the output device. C does not have a keyword for printing data like this, but every C compiler comes with a library which incorporates a number of functions. Some of these functions have been defined either by the authors of C or by the various



releases of the Unix operating system, and the majority of the functions which perform input and output are part of what is called the 'standard i/o library'. To print data, then, a C programmer would use the printf function or one of its variants. He may choose to use other functions which provide less comprehensive facilities than printf, as printf can perform a huge amount of output processing and formatting. Functions such as putchar, puts, fwrite and putw exist to perform specific i/o functions. The number of functions provided in a particular C compiler's library is a measure of the usefulness of that compiler system.

C programmers expect a bare minimum of functions to exist at the very least: standard i/o, string operations, memory allocation and arithmetic routines. A compiler's library which is missing one of these groups would need to have a very good excuse if it is to be taken seriously.

If you decide that programming in C is probably a good idea, you will need to buy a C compiler. When you look at the adverts, though, you'll almost certainly be bewildered by the sheer number of compilers available. You will also notice that the vast majority cost well over £250. Deciding which is the one to buy is complicated by the fact that every manufacturer naturally enough proclaims that its C compiler is far and away the best. Surely they can't all be right? Of course not. Every compiler system has its good and bad points. We'll look at a number of C compilers available for the two major operating systems used by readers of this magazine – Z80/8080-based CP/M (including CP/M Plus) in this issue, and 8088/8086/80286-based MS-DOS and PC-DOS versions next month.

The benchmark timings used are adaptations of the PCW Pascal benchmarks. Where appropriate, the benchmark programs have been changed to make them take advantage of C language features rather than specific compiler advantages. For example, register variables are used for integer loop counter variables throughout. Complete benchmarks appear next month.

As far as the CP/M compilers are concerned, this means that only Aztec C takes advantage – the other compilers reviewed do not support register variables and therefore treat each register declaration as a normal auto (local) variable declaration, space being allocated for the variable from the stack. As the 8080 and Z80 microprocessors are relatively inefficient at stack frame addressing, auto variables offer the lowest performance of all. If we were to alter the register declarations to be static, for example, all 8080/Z80 compilers would benefit. We decided that we can see no reason to write C programs primarily to circumvent shortfalls in implementation, so we stuck by our choice of register variable declarations.

The benchmarks for the CP/M compilers were run on an Amstrad CPC6128 with two disc drives, running CP/M Plus. The figures show the execution speed in seconds and the executable code size in bytes. Tests 7, 8 and 15 involve floating-point arithmetic, which was done using double-precision numbers. HiSoft C++ does not support floating-point, so no results for these tests are recorded.

We look at three CP/M C compilers here, although one comes in three versions in an attempt to cover all market requirements. The products are Manx Aztec C, HiSoft C++ and Ecosoft Eco-C.

Aztec C

Aztec C has been around for a considerable time and is currently on version 1.06D. The compiler for CP/M is available in three different versions, called C' Prime, C Developer and C Commercial. C Commercial is the top of the range, consisting of a full C compiler, an 8080 and Z80 relocating assembler, a linker, a librarian, a couple of useful utilities and and extensive library of subroutines. The Commercial package also includes the source code of the entire library. The Developer package is much the same except that the library source code is not provided, the utilities and libraries for generating EPROM-based code are not provided and there is no support for the Microsoft or Digital Research assemblers and linkers. The manual supplied with both these packages is the same, coming in a standard slip-cased binder containing some 200 pages. These pages give full descriptions of each of the programs provided, the library functions supplied and technical information of use to systems builders and assembly-language programmers.

The C' Prime package is intended as a cheap introduction to C programming. It contains the same compiler, assembler, linker, librarian and libraries as the Developer and Commercial packages but does not have such a comprehensive manual. Basically, technical information and specialised compiler, assembler and linker options are left undescribed. For example, the chapter documenting the assembler in the C' Prime manual is one page long, while in the Developer and Commercial manuals it is seven pages long.

The compiler supports the full C language as defined by Kernighan and Ritchie and modified by various Unix releases. This compiler is essentially equivalent to the Unix System III compiler. It has one omission, the bit-field data type. This data type is rarely used and, contrary to popular belief, its absence does not prohibit the compiler from performing bitwise operations. A bit field is simply a data type occupying a user-specified number of bits rather than a compiler-specified number. Very few programs contain usages of bit fields and those that do can be adapted to use other data types.

The Aztec C compiler is non-optimising and produces 8080 assembler code as its output. The compiler will support one register variable per function on 8080-based systems and three register variables per function on Z80-based systems. The compiler is fairly fast but does not automatically invoke the assembler. The assembler file may be assembled with the supplied Manx assembler or, if you have the Commercial package, with Microsoft's Macro-80 or Digital Research's RMAC. The resulting object code is then linked using the supplied linker (or Microsoft's L80/Digital Research's LINK if assembled with M80/RMAC) to generate the executable program.

Linkage is by far the slowest part of the process with the Manx Aztec C compiler, as both compilation and assembly are relatively quick. The code produced is generally better than that produced by the other CP/M compilers reviewed here, although the double-precision floating point arithmetic routines (16 significant digit precision) gives great accuracy at the expense of speed.

The library supplied with Aztec C is the most Unix-like of all the CP/M C compiler libraries examined here, with a full standard i/o library, low-level i/o with open, close, read, write and so forth, string ▶

operations, memory allocation functions and a reasonable set of CP/M-specific functions for direct BDOS and BIOS access, FCB initialisation, port i/o and so on. Approximately 120 functions are provided in all with this compiler. A GSX graphics library for Amstrad CP/M Plus computers is available for Aztec C from HiSoft.

It is understandable that the Commercial package is the most expensive of the three variants. It is also the most powerful, offering support for generation of programs destined for EPROM and including the full library source so that standard functions may be altered or extended. This package would normally be bought only by the very serious programmer who sells the programs he writes, or by a company which needs a complete compiler package.

For the programmer who writes a lot of C programs and may sell his products, the Developer package is ideal although still fairly expensive. The C' Prime package is attractive too, as it offers essentially the same package at a much lower cost. If you don't need comprehensive documentation and are prepared to hack the code produced by the compiler if you have special purposes in mind, C' Prime may be a better buy than the Developer package.

EcoSoft Eco-C

Eco C is an excellent introductory compiler for the programmer who decides he needs floating point arithmetic but cannot afford an Aztec C package. Eco-C supports the same C language as Aztec C, again without bit fields, but has a rather non-standard library, a few serious omissions and only one floating point precision. The omissions are such vital routines as exit, which is important because it closes open files, ensuring no data loss if your program forgets to close any files it has open. A C program should automatically flush any i/o buffers and close any open files whenever a program ends. In all the cases examined here apart from Eco-C, the generated programs do. This behaviour of EcoSoft's library is non-standard and dangerous.

Although the Eco-C compiler comes with quite an extensive library, a large number of the functions are named differently or perform slightly differently to their Unix counterparts, which means that users familiar with one library have to relearn huge amounts when transferring to the other. As Unix is by far the most important standard, EcoSoft should take note.

The manual supplied with the compiler is comprehensive in its description of the compiler's operation, although the technical section leaves a little to be desired. The manual makes numerous references to books by the president of Eco-C, Dr. Jack Purdum. While Dr. Purdum's books are indeed good tutorials for the language, it is perhaps a little unfair to expect the user to buy the compiler and a separate book simply so that he can develop programs.

The compiler takes an age to compile, eventually producing an assembler source file which may be assembled with Microsoft's Macro-80 (not supplied) or the SLR Systems assembler, which is supplied. The documentation provided with the assembler is a photocopied sheet explaining almost nothing. The linker supplied with the package is also by SLR Systems and suffers from the same standard of documentation. Certainly Eco-C is cheap and the SLR programs are cut-down versions of the full retail versions, but we feel that documentation is all-important to the serious compiler user. EcoSoft could greatly enhance its reputation by taking a little more care.

It is perhaps a sign of the times that EcoSoft's MS-DOS C compiler is a far superior product. In America at least, CP/M is dead and they don't seem to care.

HiSoft C++

Declare your interests first – the author of this review worked for HiSoft until the end of 1986 and had quite an involvement with this product. He sincerely hopes that no bias (for or against!) is evident in this article.

HiSoft C++ is the cheapest of these three C compilers and is priced low enough to attract the first- time buyer. Like the other two, HiSoft C does not quite support the entire C language. It lacks bit fields, floating-point arithmetic, long integer arithmetic, the comma operator (not very important) and a few other minor things such as a full pre-processor. More importantly, perhaps, it offers no scope for separate compilation (the practice of writing a program module by module, compiling each module separately and then linking the lot togeher at the end). To an extent, this is got around by having a sort of selective source linkage mechanism, in which library source files are included during compilation and only those functions actually used are compiled into the resulting program. An advantage of this method, of course, is that compilation is blindingly fast – this compiler eats through source files when compared to the compile-assemble-link process required by the other two compilers.

HiSoft's library is fairly extensive, with more functions that EcoSoft's library and certainly more standard ones. The usual standard i/o is offered, together with string operations, memory allocation and specialist CP/M functions for BDOS and BIOS access. Surprisingly, there is no system-level i/o – equivalent to Unix entry points such as open and write – offered. Naturally enough, random access is provided in the way of fseek and ftell, although as HiSoft C does not support 32-bit long the parameters to these functions are a little non-standard.

The manual is good considering the low cost of the compiler, with more pages than Eco-C's and a better description of the library functions. It also includes a definition of the language accepted by the compiler, something missing from the other CP/M compiler manuals. The action of each C keyword is explained in detail with useful examples. The technical information section is skimpy and could do with a re-think. People who buy C compilers often seem to be the sort of people who very much like to



get their hands dirty and the more information presented to them the happier they feel.

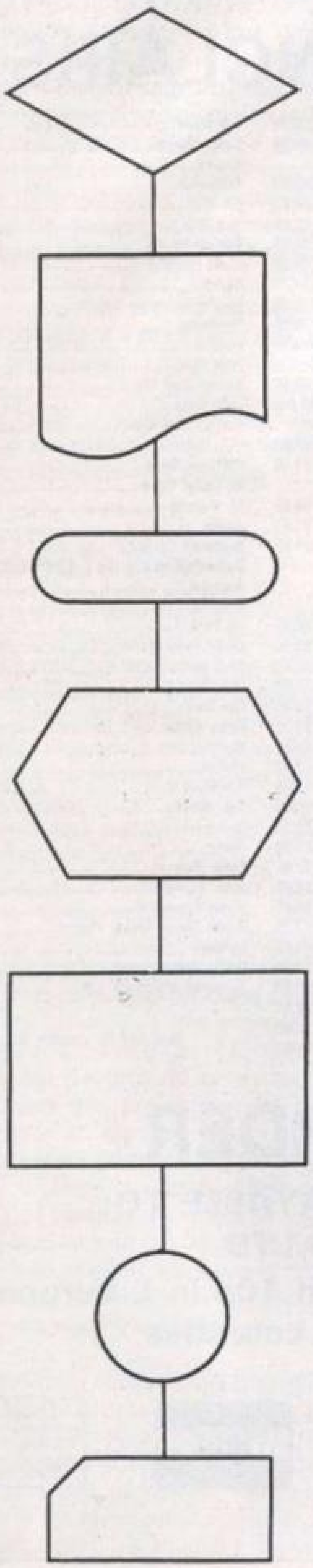
Amstrad CP/M computer owners get a paticularly good deal from the HiSoft C compiler: as well as the standard CP/M compiler, the disk also includes an Amsdos compiler with a suitably altered library and a GSX graphics library.

Conclusions

This part is relatively easy – if you are a professional organisation turning out programs for OEMs, bespoke applications, EPROM development and so forth, you will almost certainly want the Aztec C Commercial package. As the package is rather expensive, most others will probably like to buy the Aztec C Developer package. This is expensive, too, which leaves you with HiSoft C++, EcoSoft Eco-C and Aztec C' Prime. For beginners and people who aren't entirely sure if they're going to like C, buy HiSoft C. For people who want floating point arithmetic but are not prepared to pay too much, the choice is between Eco-C and C' Prime. My money would be on C' Prime, but it's a close-run thing. Benchmark timings follow next month.

HiSoft C++
HiSoft (0525) 718181
Manx Aztec C
EcoSoft Eco-C
Grey Matter Ltd. (0634) 53499

ADVENTURE BUILDING



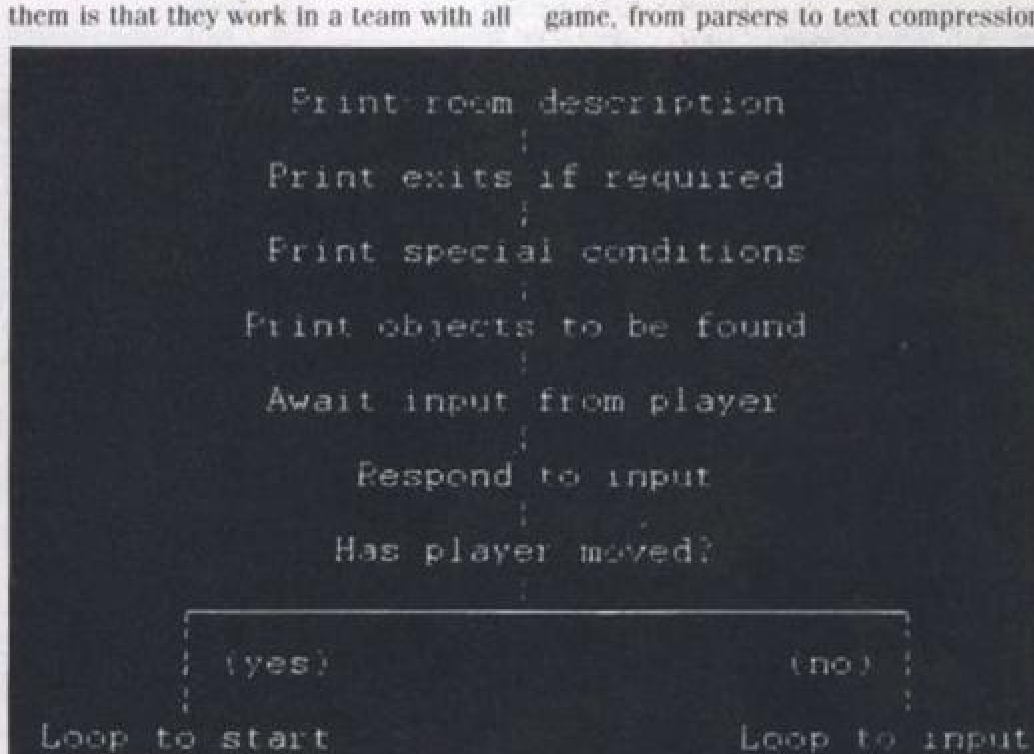
PETE GERRARD, ARMED ONLY WITH A BASIC PROGRAMMING MANUAL, SHOWS YOU HOW TO PRODUCE TEXT ADVENTURES OF YOUR OWN.

Writing a good adventure game has often been compared to writing a good novel. While it is true that you do need a flair for a story, which is something that no-one can teach you, you are also going to need a flair for programming. With all due respect to, say, Isaac Asimov, I have yet to see a robot adventure of his on the market. So, although this series of articles will not turn you into a genius in the adventure world if you have the imagination of Benny from Crossroads, it will provide all the programming techniques necessary to take an idea and convert it into a rather good game.

What sort of standard are we aiming for? Everyone who plays adventure games must at some point have come across the name of mighty Infocom. They have produced over the years a number of classic games (Starcross is still one of my favourite adventures of all time), and although it would be unfair of us to aim quite so high, we will be able to give them a run for their money. The difference between us and them is that they work in a team with all the time in the world to produce increasingly better games, whereas you or I are, generally speaking, going to be working alone, with more mundane things in life to occupy us other than producing adventures: earning a living, for example. However, slow and careful progress should take us a fair way along the path to perfection.

Why bother programming for yourself at all, when so many adventure-writing utilities exist? Apart from the sense of satisfaction to be derived from doing all of the work yourself, rather than relying on the clever programming of someone else, there is also the fact that, however hard you try and disguise it, a Quill'ed game is a Quill'ed game. It's like painting by numbers; you can use lots of different colours but still end up with a painting that looks remarkably like hundreds of other paintings. In short, you need individuality, the hallmark of genius, and although this approach will take a little while longer it will be worth it in the end. After all, that's a computer you've got in front of you, not just a clever typewriter, and it makes sense to get to know the beast if you're going to come anywhere near getting the best out of it.

So, over the course of the next six months we're going to be looking at everything involved in writing an adventure game, from parsers to text compression,



● Figure 1.

vocabulary to movement, mazes, problems, solutions, other characters, until in part six we finally put it all together and construct the finished game. By then you'll either be sick to death of adventure games, and programming for that matter, or as I did you'll have fallen in love with the idea and be prepared to write adventure games until the cows come home. But, and here we come to the first bit of concrete advice, get someone else to test what you fondly regard as the finished product. You will know the game inside out, and will know exactly what sort of response to expect, and where, and so your route through to the end will tend to follow the same pattern every time, neglecting to test all those little side-avenues of thought that the newcomer to the game will want to explore. Give it to someone else, and be prepared to have to correct your beloved program. It happens to all of us.

In the previous paragraph I mentioned some of the things that we'll be looking at in the months to come. Any adventure game can be broken down like that, and an overall collection of what we'll term jump tables should ideally control your adventures. Like perhaps figure 1.

This is perhaps a mite crude but there's nothing else that needs to be done in an adventure game. All these seven sections can be controlled by GOSUBs, PROCedures, or whatever else your computer might happen to support, and might, in a finished program, look something like figure 2.

So seven simple lines of Basic can control the entire game. Admittedly some of the lines (like line 110 – respond to input) cover a vast range of options with one simple GOSUB, but as we'll see a little later on, this is easy enough to break down into several subdivisions.

Having found that it is a relatively simple matter to keep control of a large adventure game, how on earth do you start to write the thing in the first place? Let's take a look at that procedure, and produce a few simple rules.

This is often the most difficult part of the whole thing, getting started. It involves getting the idea in the first place, beginning with something as simple as determining whether the adventure is to be set in deep space, in the wild west, or in the traditional spooky underground caves where one expects to bump into dwarves with names like Dimli Glowing. You decide where your adventure is going to take place. Never mind what is actually going to happen there, just settle on a base for now. Let's say you chose the wild west. Now, having got the scene, one can decide on the aim of the adventure.

I've written two adventure games set in the largely mythical American days of the cowboy – one where the aim of the game was to capture someone and put him in jail, the other where our intrepid hero had to blow up the town safe and get some money. Very few adventures these days seem to follow the traditional route of exploring and finding vast quantities of underground treasure, and seem to have a quest to fulfill instead. We will follow that route, and to follow approximately how one adventure came to be written, we'll take the second example: blowing up the town safe in order to get some money.

Now we can start making some real progress. We know the area and we know the general theme of the game. This next bit of advice applies even more strongly to writing adventures than it does to attempting to solve the things: draw a map. The difference between writing and solving is that you control the map, and can decide where everything is going to go. For the town safe adventure, I originally drew something like figure 3.

```
                 1
                 :
                 2        6--7--8
                 :        :     :
                 3--4--5--9--10
                 :
 14--13--12--11
  :   :   :   :
 15--16--17  18
              :
             19
```

● Figure 3.

There's no need to show the whole map, as this small fragment will suffice. Besides, you might play the game one day. In all, this adventure started off with 52 locations, although it eventually ended up with 64. It just grew and grew in the writing. As you can see the numbers progress as we go down the map, and linked locations (those joined with lines) indicate locations that can freely be moved between. Thus going south from location one takes you to location two, going west from location 12 takes you to location 13, and so on. Note that you can't, for example, go east from location 17 to location 18: they are not joined together. Having drawn the map, I then had to put the safe somewhere.

As it stands, locations four to ten form one group of places to visit. I decided that this could be the saloon. Locations 12 to 17 form another group of places, and this became a stable, complete with argumentative horses. Other similarly grouped locations became a sheriff's office, a general stores, and the ultimate destination of the game: the bank. The bank occupied locations 50 to 52 originally (it grew to encompass a few more later on) and so I decided to put the safe in location 52, as far away from the start of the game as possible.

We are now making significant steps forward. The idea for the game is there, a map has been drawn and the final problem on the game has been earmarked. Obviously, other problems are going to have to be solved along the way: a one-problem adventure is not destined for everlasting fame and glory, and this is where the beauty of having drawn a map comes in.

A problem could be found in getting into the saloon: circle location four on the map. A problem could be found in getting into the stable: circle location 12 on the map. Once in the stable, or saloon, you could have a problem getting out, or there could be a problem of some sort inside the building. A problem, perhaps, that needs solving in the saloon before you can enter the ▶

```
100 GOSUB 1000:REM ROOM DESCRIPTIONS
102 GOSUB 2000:REM EXITS
104 GOSUB 3000:REM SPECIAL CONDITIONS
106 GOSUB 4000:REM OBJECTS FOUND
108 GOSUB 5000:REM AWAIT INPUT
110 GOSUB 6000:REM RESPOND TO INPUT
112 IF NL=PL THEN 108 ELSE 100:REM
IF NEW LOCATION = PREVIOUS LOCATION
THEN GET INPUT ELSE PRINT NEW LOCATION
```

● Figure 2.

ADVENTURE BUILDING

stable, or vice versa. It's up to you. Just make sure that the adventure is solvable before you start on the actual programming, because it's a lot easier to correct something on a scrap of paper than it is to correct a vast web of IF . . . THEN . . . ELSE . . . lines of program code.

Problems sometimes suggest themselves by the very nature of the map, as in the saloon and the stable mentioned earlier. What about walking down the middle of the town, those locations in the centre of the map? No self-respecting cowboy could be expected to walk through town without occasionally coming across a gunslinger out for his blood, and so at location eighteen there is the possibility that Wyatt Earp might stroll onto the scene and demand a fight. Circle location eighteen on the map.

This in turn suggests another problem. You will need one bullet to dispose of Earp, leaving you five. If another four characters can be persuaded to put in a cameo appearance from time to time, you have one spare bullet left. What if two problems could be solved by shooting something (a lock to a door, for example, or a horse that won't let you in the stable), meaning that you have one bullet too few to complete the game? One of those two problems could be solved in another way (a key for the lock, a lump of sugar for the horse), but the player won't know that. Opening the gate to the garden path and persuading the player to walk up it is one of the keys to producing a good adventure game. You might be cursed at long distance by a player who thinks that the game is impossible, but you'll know better.

I generally aim for about one problem every three or so locations, giving this particular game some 21 problems for the player to solve. In fact, it had 22, as I couldn't resist adding one particularly gruesome problem for the unwary.

That way you can gradually begin to draw the player into the game, hopefully making the problems more and more difficult the further he gets, culminating in something that should require a lot of headscratching before the solution dawns.

Can we now, at last, begin writing our adventure? No. Any adventure, however well-created the scenario might be, however atmospheric the location descriptions can be made, stands or falls by the vocabulary you give it. Although the series of articles over the next six months will go into this in a lot more detail, it is worth considering just some of the work that has to be done on paper first before we can sit down at the computer, get the coffee out, and prepare for an extensive session of programming. This involves not making excuses like "I've been watching the all-night live cricket and I'm too tired".

With the map drawn and the problems thought out, by now you probably have an extremely tatty piece of paper. If this is the case, it's worth making the effort of drawing a much neater and tidier version, taking the trouble to label each location so that you can refer to it by name rather than by number. It will help later on.

Having done that, we can begin to draw up our vocabulary list. In other words, a list of those words that the computer will understand when they are typed in by the player. To make life easier, it is a good idea to have the same twenty or so verbs at the start of every list for every adventure that you write. This not only saves time, but it does give the rewarding feeling of having started on the game in earnest. This list of twenty should include movement words, such as NORTH, N, or GO followed by a direction, and covering whatever compass points you can be bothered with. Up and down if you like, north-east, south-south-west if you want to get totally carried away, but I usually stick to the four cardinal directions plus up and down.

With abbreviations such as N for NORTH, this gives us the first twelve verbs. Then, every adventure should include the following: QUIT, SCORE, LOOK, INVENTORY, HELP, SAVE, RESTORE, WAIT.

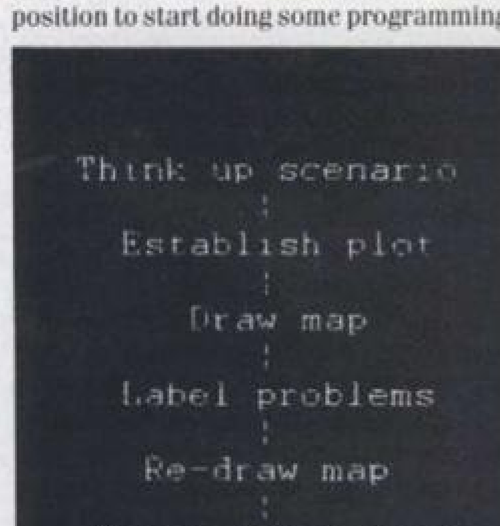
It makes your life easier and it makes the player feel at home with a set of commands that are familiar from other games. Other verbs suggest themselves quite naturally, like GET or TAKE, DROP, EXAMINE, OPEN, CLOSE and so on. As this is a cowboy adventure, we'll also need to SHOOT things occasionally, and possibly LOAD a gun which is why we used RESTORE instead of LOAD in the earlier list. Other verbs will include words like ATTACK, KILL and so on (bloodthirsty lot, adventure players), plus a lamentable selection of swear words, since people do attempt the anatomically impossible from time to time.

Having got a list of verbs, one will also need a list of objects that the computer can understand. There is no point in having an excellent location description culminating in "with a wall that is too sheer to climb", it when the player types in "CLIMB WALL" the program responds with "I can't see a wall here", or something equally disappointing. Most of your object words will come from the room descriptions themselves, or from the problems that have to be solved. If a problem involves opening a locked door, then object words required will include LOCK, KEY, DOOR and so on. If it involves an unruly horse in a stable, you'll need corresponding object words like HORSE, STABLE, etc.

Finally, you'll need a list of "action" words, like ON, UNDER IN, AT, and others, so that one can type in things like "PUT KEY IN LOCK" and be understood by the program. For now, concentrate on the main verbs and objects, and we'll worry about everything else in the rest of the series.

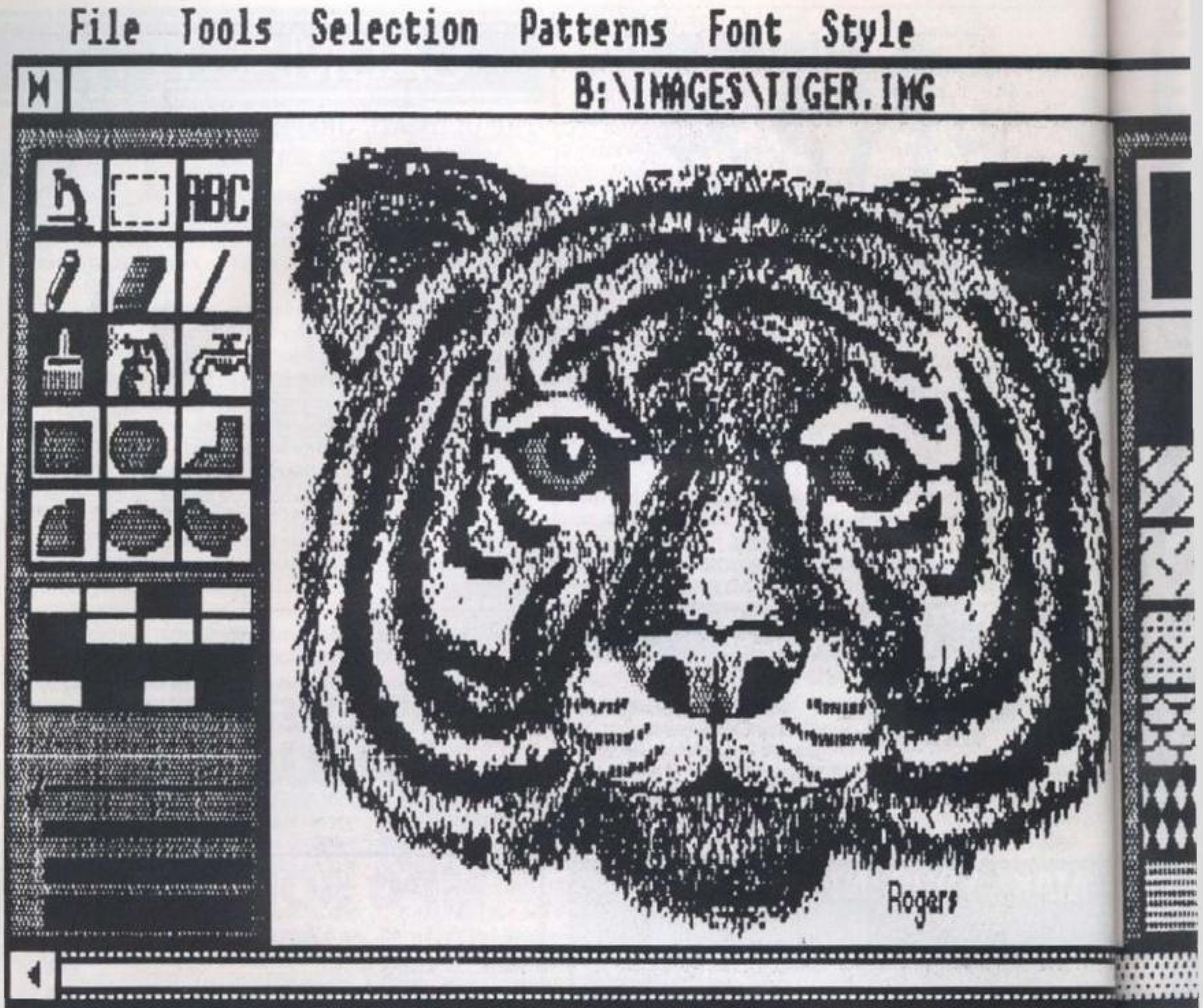
Now we can go right back to our original "jump table", where we see that the line 110 GOSUB6000:REM RESPOND TO INPUT covers our program's understanding of what the player has typed in. Again, there will be more detail next month, but the program will in essence be acting on a number rather than a verb. NORTH might produce a variable VB=1, for example, QUIT might produce VB=13, and so on. Thus, at line 6000 we have something like 6000 ON VB GOTO 6100,6150,6200,6250,6300 or whatever. If your computer is blessed with a computed GOTO command, you could write 6000 GOTO (VB*50+6050) to produce the same result. It will make the program respond quicker for one thing, so in the absence of a computed GOTO for your machine, your homework for now will be to write one. Either that, or copy one from a magazine somewhere, I won't tell on you.

Now, at long last, just when we're in a position to start doing some programming,



● **Figure 4.**

we've run out of space. To conclude for this month, figure 4 shows the sequence of actions involved *before* we start programming. Next month, let the programming begin.



PAINTING BY

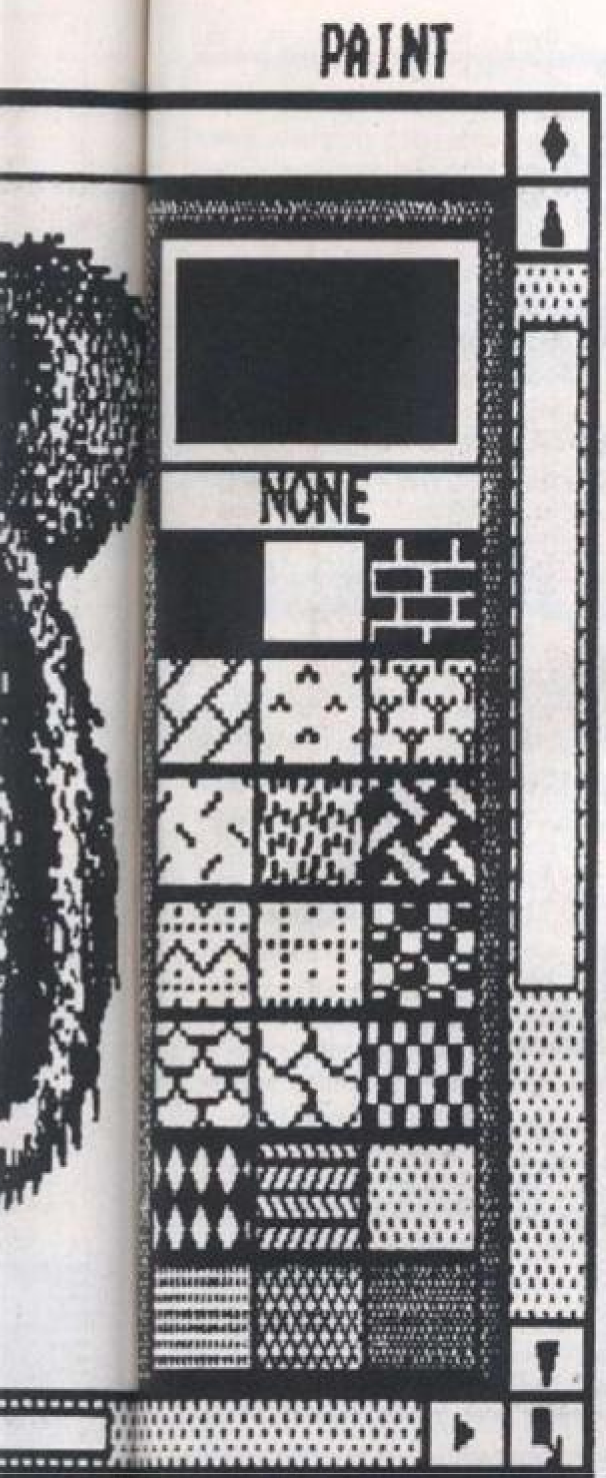
GEM HAS BEEN CRITICISED FOR SLOW RESPONSES AND THE LACK OF PROPERLY INTEGRATED SOFTWARE. PAUL HENDY ARGUES IN FAVOUR.

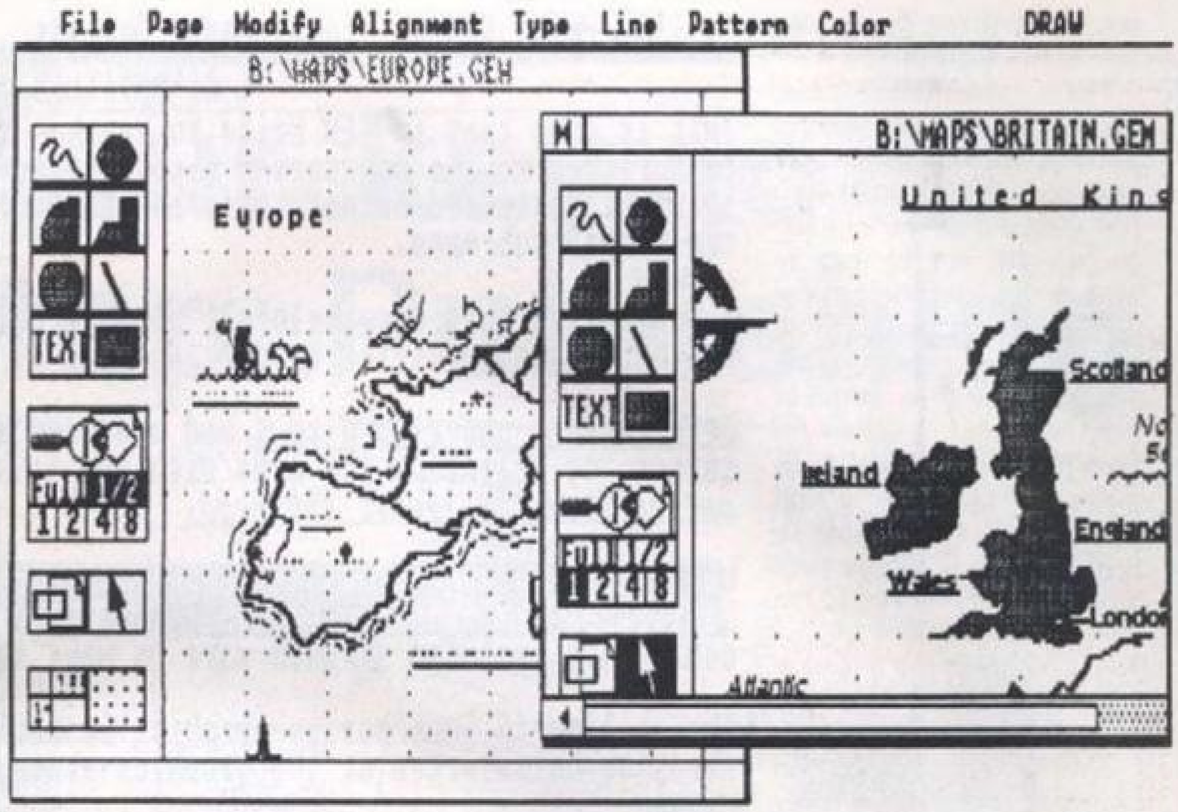
Now that all the ballyhoo over the Amstrad PC launch is dying away, perhaps it is time for a more considered view of the GEM series of programs available for the machine. Great store has been placed on the inclusion of Gem – Graphics Environment Management – whereby the control of the computer is simplified into the manipulation of small pictures on the screen (icons). Gem is the brainchild of Digital Research but conceptually similar systems are available for other computers, principally Microsoft Windows, and the WIMPS seen on the Apple Macintosh.

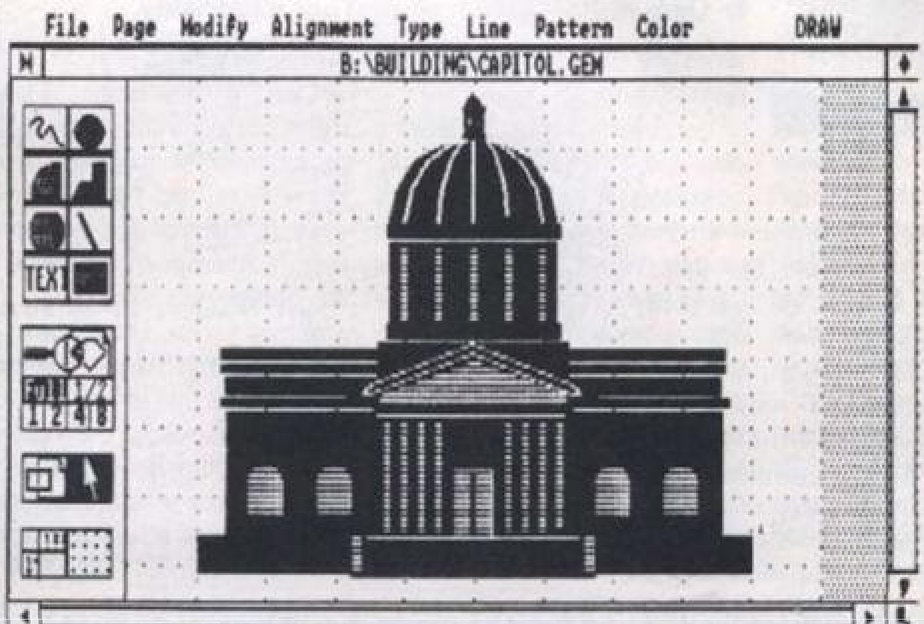
The concept greatly simplifies routine tasks. Copying files from one disc to another does not involve complex command lines, with the inherent danger of spelling and syntactical errors; rather it is

● **Gem Paint is the pixel orientated art program.**









● **Above and left: Gem Draw is object-orientated for use in more serious applications.**

Y NUMBERS



simply achieved by "dragging" the icon of the required file from one disc window to another. Similarly, disc formatting is made much less susceptible to embarrassing operator errors.

It must be acknowledged that Gem uses a good deal of memory space, though this is less important than it used to be. Do you remember the days of the ZX-81, when the 16K expansion RAM pack was launched? Some pundits claimed that this was more memory than a ZX-81 user would ever need. Another disadvantage is the sluggishness of Gem on the Amstrad, especially when compared to the Atari ST range which has its version of Gem stored on ROM. This means that it is always present in the machine and uses no user memory. The sheer horsepower of the Atari MC 68000 processor makes Gem acceptably quick to respond.

It is the Atari which shows the true power and potential of Gem and I hope that an equally impressive version will one day be available for the Amstrad. Digital Research issued a press release some time ago to state that it was close to placing Gem on a chip, and if it achieves this goal I will be surprised if it does not appear on the Amstrad range.

Digital Research has followed the Gem environment with a series of Gem-controlled programs designed to exploit the mouse and icon concept.

For me the best is Gem-Draw, a powerful drawing package. I seem to be one of the few users of Gem-Draw on the Atari ST and I quickly fell in love with it. The very high-resolution monitor and speed demonstrate the software to its best advantage and it is a great pity that the launch of the full Gem range of this computer has been delayed.

On the Amstrad the conclusions are different. The lack of speed is noticeable, particularly when drawing irregular lines, because the screen updates are often some way behind the movements of the mouse, needing irritating moments to catch up. Nevertheless all the functions are still there.

Boxes can be drawn with ease, and the 'snap' feature, which forces dimensions to pre-determined ruler spacings, ensures straight, well-aligned pictures. Shading, filling, and the insertion of text in various point sizes is possible, and the new Draw Plus now has a mirroring feature. This means that pictures and text can be reversed, or rotated. Previously, text had to be horizontal. ▶

and it could not be twisted through 90 degrees.

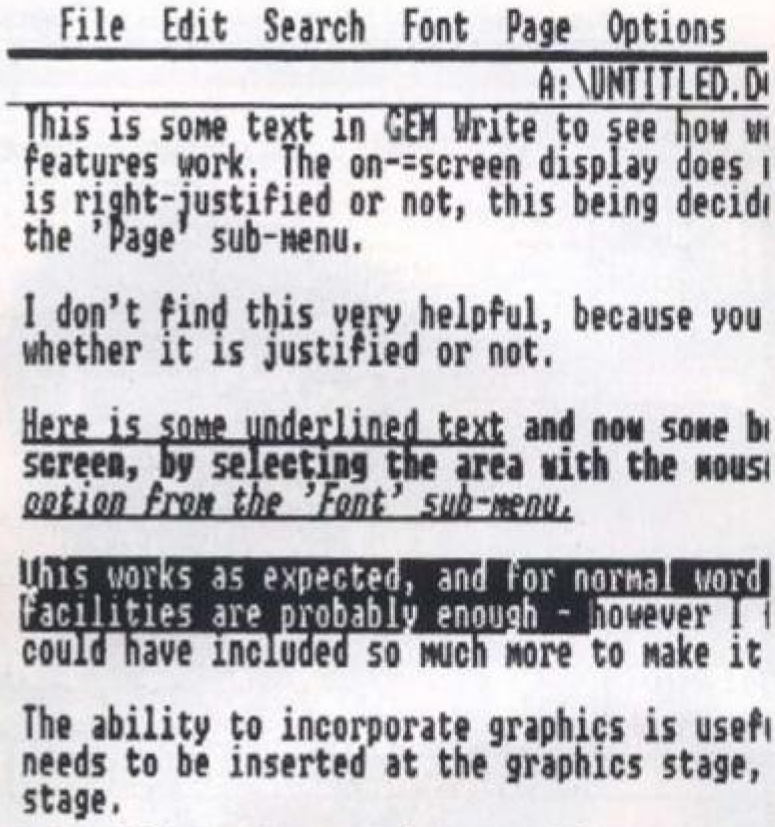
The distribution disc supplied has several sample pictures, some of which contain a great amount of detail. At first glance it seems impossible for the normal user to achieve this precision, but one of the drawing options is to zoom in to small parts of the whole picture. The control of this has been improved in Draw Plus and enables small details to be drawn in at high magnification. Pulling back to reveal the whole picture then gives a true impression of the printed version.

The control of the printer is probably the weakest element in the Gem applications series. I am glad I use an Epson printer, because Gem is ready installed for this, and by selecting "To Output" I was able to get high-quality printouts.

Poor Control

Gem Paint is already supplied with the Amstrad and much has already been written about it. It is much less sophisticated than Gem Draw Plus and I would recommend readers to see the latter before buying the former.

Gem Write is a disappointment. Though it has the mouse to make editing easier, it lacks a number of features one would normally expect in a word processor – particularly printer control.



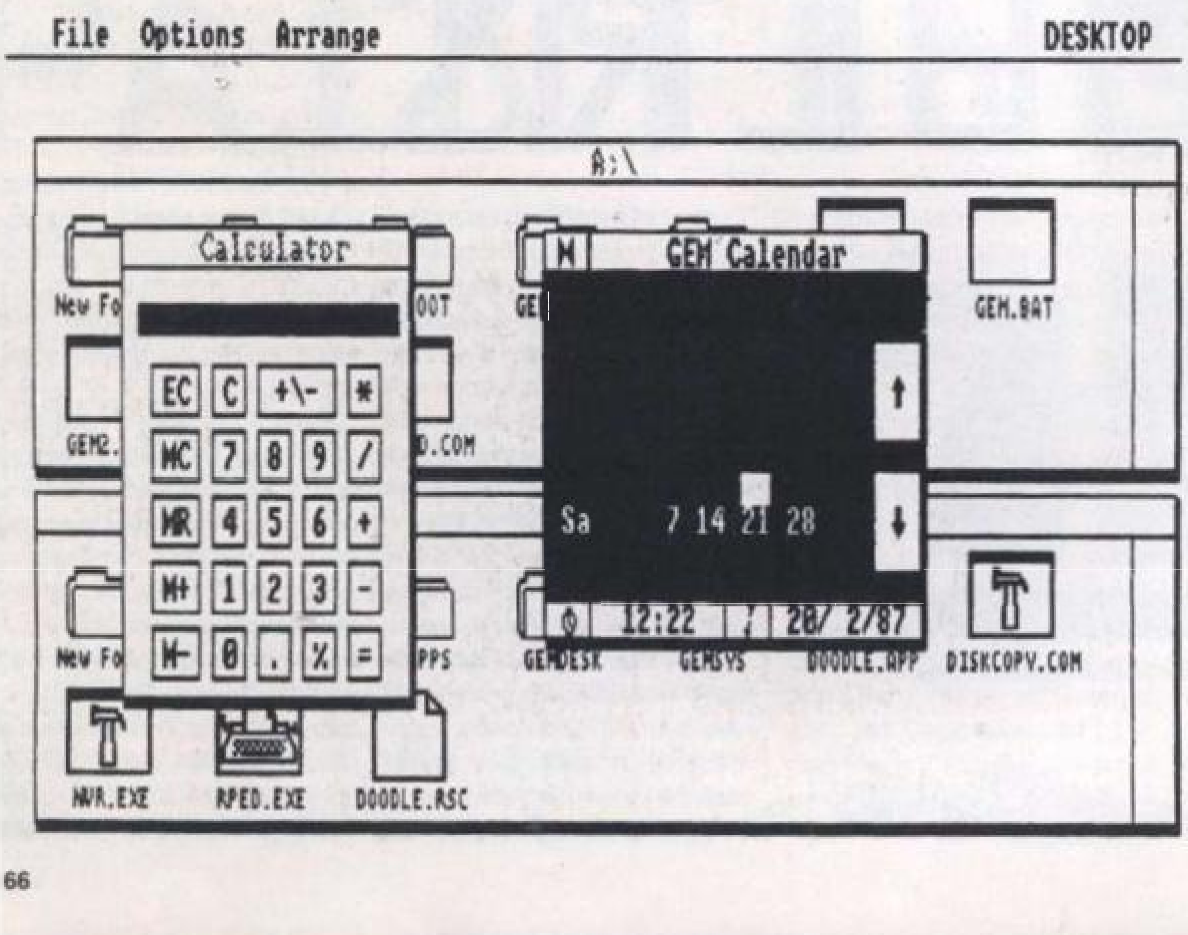
● Gem Write – printer control not a speciality.

Very little control seems possible. You can have normal, bold, italic and underlined text, and that appears to be all unless you use the special CMD embedded command. This allows you to send any control code to the printer, by placing the required codes on their own line, preceded by two dots. This works satisfactorily but limits you to font changes at line breaks. Special codes cannot be sent in the middle of a line.

One of the major advantages of Gem Write is its ability to incorporate graphics from Draw Plus and Paint. This is easy to control but once the picture has been inserted it is advisable to turn off the graphics mode. Otherwise, as you scroll the disc containing the picture it is continually accessed to reload the picture. With the graphics mode off, a portion of the screen is shaded to show how much room the picture occupies. When you then finally print it, the graphics will be inserted.

I failed in an attempt to enter text around a graphics insertion, so it would seem necessary to insert any required text while in Draw or Paint. This is a limitation, because you might think of the text later and then have to go all through the Draw process again. Another disadvantage is that the graphics are printed in the printer's graphics mode, so the text looks different from the text of the main article.

● The pop-up accessories are limited, and Sidekick may prove better.



Gem Write Failings

Digital Research uses an OUTPUT.APP program to feed any material to the printer. Thus output from Gem Paint, Draw Plus or Write will all go via this routine. This gives compatibility but the degree of control available is poor.

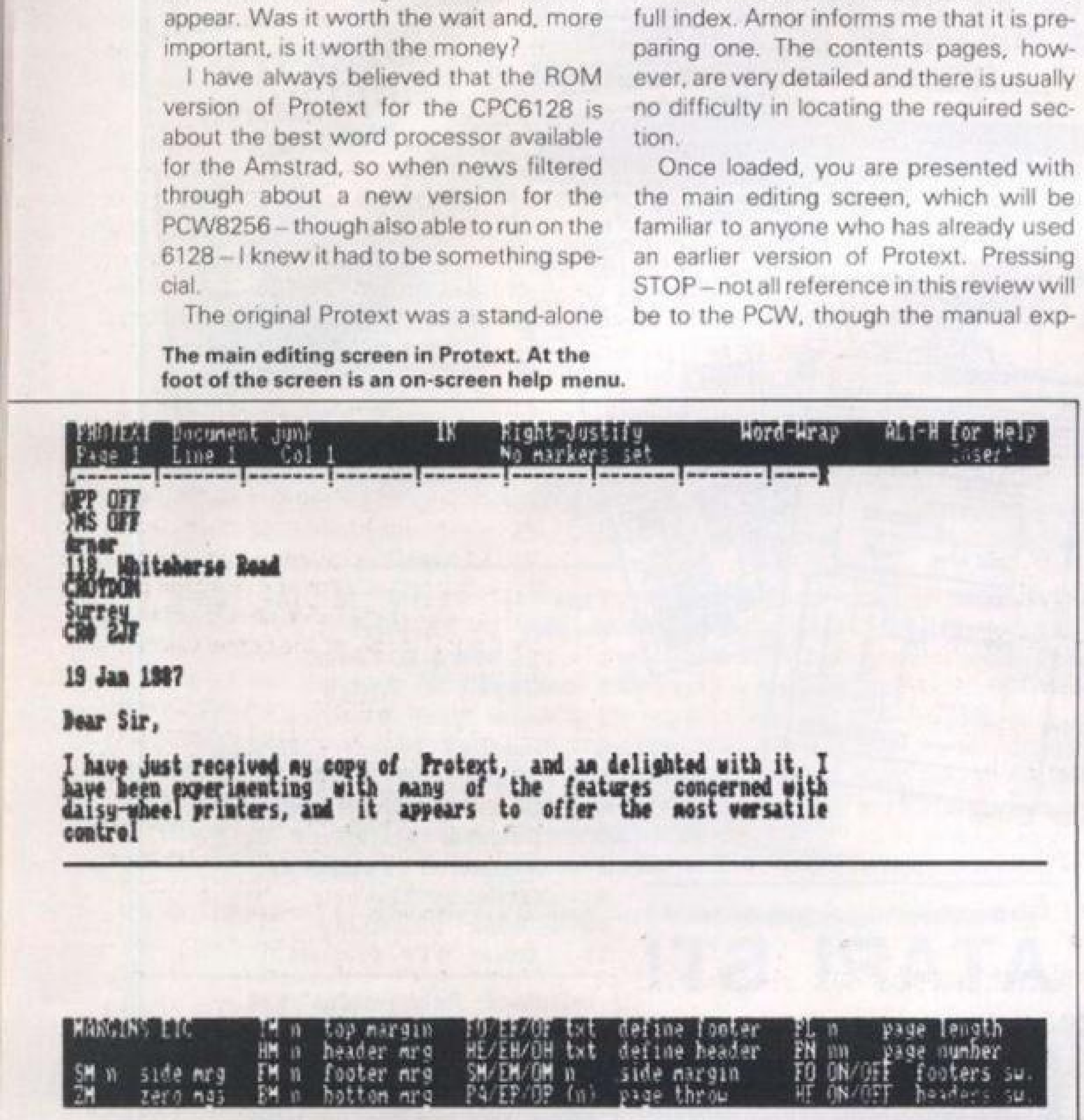
It appears to have been designed for business, because you can select printer, plotter or camera – not the usual peripherals in the normal home. It also appears that if you do not have an Epson or compatible printer, you need to buy a separate pack of fonts and drivers to control your particular printer. Only having had a brief time to look at this extra pack before writing this article, it still seems rather unfriendly to me, a contradiction of the Gem philosophy, and it lets down the excellent Draw Plus program. This is all very unsatisfactory and I hope Digital Research modifies this aspect of the Gem series.

The other criticism is that to exploit OUTPUT.APP properly, you really need to obtain the Gem Desktop manual, which is not supplied with the Amstrad PC. I was fortunate to get it with Draw-Plus and it has improved my understanding of this powerful program.

If the control of the printer can be improved, and if the word processor can have extra features added to it, features which are standard in many other processors, like spell-checking and text entry around graphics, Digital Research would have a much better system on its hands. As it is I find Draw Plus invaluable and the others rather disappointing.

PROTEXT

IRRITATED BY THE LIMITATIONS OF LOCOSCRIPT, PAUL HENDY TRIES OUT PROTEXT ON HIS AMSTRAD PCW AND LIKES WHAT HE SEES.



The main editing screen in Protext. At the foot of the screen is an on-screen help menu.

Christmas reminds us of prophecies being fulfilled ages after being announced, so it is appropriate that it was the time for the long-awaited *Protext* to appear. Was it worth the wait and, more important, is it worth the money?

I have always believed that the ROM version of Protext for the CPC6128 is about the best word processor available for the Amstrad, so when news filtered through about a new version for the PCW8256 – though also able to run on the 6128 – I knew it had to be something special.

The original Protext was a stand-alone word processor, capable of being linked with *Promerge* and *Prospell,* available separately, for mail-merging and spell-checking respectively. Now they are all integrated on one double-sided disc and the system runs under CP/M. That is the most important difference between the two versions and it means that, for copyright reasons, some COM files have to be transferred by the user to install Protext for the various computer/memory/disc drive combinations.

That is done very easily and is explained fully in the manual. It also means that some of the utility programs provided, including the spelling checker, are available under CP/M in their own right.

It is appropriate to comment on the superb ring-bound manual. It is typeset and printed professionally, as opposed to the sometimes draft quality photostats which accompany other programs. It is divided clearly into sections and my only comment is that it would benefit from a full index. Arnor informs me that it is preparing one. The contents pages, however, are very detailed and there is usually no difficulty in locating the required section.

Once loaded, you are presented with the main editing screen, which will be familiar to anyone who has already used an earlier version of Protext. Pressing STOP – not all reference in this review will be to the PCW, though the manual explains what keys are different on the CPC6128 – toggles between edit mode and command mode and from the latter you can perform global commands, e.g., FORMAT to re-format the entire document, or SAVEB to save on disc just a preselected block.

When editing, there is a plethora of editing aids and I believe that is the area where Protext has scored heavily over its competitors. All the features which could possibly be required are there. Fast scrolling, jumping a character, word, paragraph or screen, forwards or backwards, are all possible, and the speed of response takes away the breath. Arnor has, understandably, published a comparison chart of speeds in its advertisements and anyone who has written more than two pages using LocoScript will realise what a difference fast movement round the text can make.

There are two schools of thought in word processing. One group believes in drop-down menus, as exemplified in LocoScript and the new *WordStar 1512,* with the advantage of ease of use and less need to refer to the manual. Opposed to this are the word processors which use key combinations, like Protext. They have the advantage of speed, once learned. Editing is not delayed while you wait for the appropriate menu to display on the screen.

Most editing functions are performed by pressing the appropriate character while holding down the ALT key. Consequently ALT-W turns word-wrap on/off, ALT-J turn the justification on/off, and ALT-C centres the current line. Arnor has utilised the special editing keys provided by Amstrad, so WORD, PAGE, DOC, work in the same way as in LocoScript, to make the transition easy.

Some slight differences are necessary in the way CUT, COPY and PASTE work, because any text to be moved or deleted is first marked, by pressing SHIFT/COPY, and then cut or pasted. I find this a more satisfactory method, having always been confused about pressing the correct combination, of CUT/CUT or COPY/CUT in LocoScript.

A system of rulers is used to control the overall layout of the document. They can be entered anywhere in the document and are marked by using the > symbol as the first character on the line, rather like a stored command. Left and right margins, TABs and decimal TABs are all adjustable to give complete control over the formatting of the text. I wish that there was an equivalent to the WordStar ALT-OG command which indents a paragraph to a TAB position automatically. That has to be accomplished by using a new ruler and is not so convenient.

Two ALT commands which should not be ignored are ALT-Y and ALT-O. Protext allows you to hold two files in memory at the same time and swap between them by pressing ALT-Y – or typing SWAP from command mode. I had not realised how useful this was until I tried it. Writing a letter to one person, in the middle of writing this review, involved no prior saving of text. I also wanted to transfer a portion of this article into the letter and that was simplicity itself using ALT-O. Full marks for the inclusion of the new feature.

Commands are provided to re-define the function keys and the manual appen-

T DEMONSTRATION

dix gives details of what keys are already set. It is very simple to do and permits common phrases and commands to be recalled with ease. The definitions can be saved as a file and executed either by using EXEC – described later – or by setting them as part of the STARTUP file, used to load Protext at the start of an editing session.

In addition to key combinations, Protext uses a system of stored commands. They are inserted at the start of a line and are indicated by using the > symbol as the first character in the line. They control, among other things, page length, line length and margins, but it would be incorrect to assume that the stored commands do little else.

The 63 commands are central to the way Protext works. Some are concerned with mail-merging – described later – while others will decide what pages are to be printed, control headers and footers, re-define characters, and enter printer control codes. This last facility is in addition to the excellent control of printers already provided elsewhere in the system.

Any printer code can be defined to a letter, which is then entered into the text, preceded by ALT-X. That will cause the letter to be displayed in inverse video, indicating where the code has been set. Thus ALT-XU will turn on underlining, and again ALT-XU will turn it off. Because of the large number of printers, each using different protocols, the codes can be saved in a special printer driver file.

As part of that file, it is possible to decide whether on the PCW it is to be the internal PCW printer or one connected to the parallel or serial interface to be used. Unlike other word processors, it is not necessary to run DEVICE.COM first to turn on the interface. Also when printing a file, the command PRINTQ can be used to force NLQ mode on the printer.

Using a daisywheel printer, it is possible to get proportionally-spaced, right-justified and micro-spaced text. That is impossible with almost all other word processors for home micros and represents a substantial feature for owners of those printers. Users of dot matrix printers, including the PCW, should not try to print in this mode, as the printer will operate very slowly.

In command mode, there are 67 commands to re-format or print the entire, or marked, document, as well as the usual loading and saving of text files. As with the stored commands, you are advised strongly to study them carefully, because there are some utility gems. To pick out one in particular, EXEC will execute a file of commands prepared previously within Protext. There is an example on the Protext disc, called STARTUP, and running that file will cause several of the Protext programs to be transferred to the memory drive for speed of editing.

Any file can be run by using the EXEC command. Thus when printing labels, I use a different printer – with different codes – set to elite mode and I need to change the line length. Rather than have to do that every time, a special file has been prepared, containing the stored commands for changing the page layout and for loading the required printer driver. That is then run by typing EXEC 'label' and the whole job is done automatically.

Arnor has developed that even further whereby, on calling Protext, you can at the same time run an exec file automatically by using the < symbol. Consequently to go from CP/M immediately into my label routine, I would type PROTEXT <LABEL. For users who would prefer a different ruler and page set-up to that supplied by default, the feature will be most welcome.

From top to bottom: the main menu of the SETPRINT printer control program; the main menu of SM, the spelling checker; the utilities sub-menu showing control of the dictionary.

```
1 - Set printer options
2 - Set serial options
3 - Set printer control codes
4 - Set character translations
5 - Set character widths
6 - Load printer driver
7 - Save printer driver
0 - Quit SETPRINT
Select option :
```

```
PROTEXT - MAIN SPELL MENU

S - Single pass check
T - Two pass check
C - Catalogue files
D - Drive select
G - Group select
B - Backup file erase
P - Printer on/off
U - Utilities
Q - Quit SPELL

Select command:
```

```
DICTIONARY UTILITIES MENU

E - Edit dictionary
L - List dictionary
F - Find words
A - Anagrams
P - Printer on/off
W - Word count - dictionary
N - Name change - dictionary
I - Initialise new dictionary
B - Build dictionary
C - Catalogue files

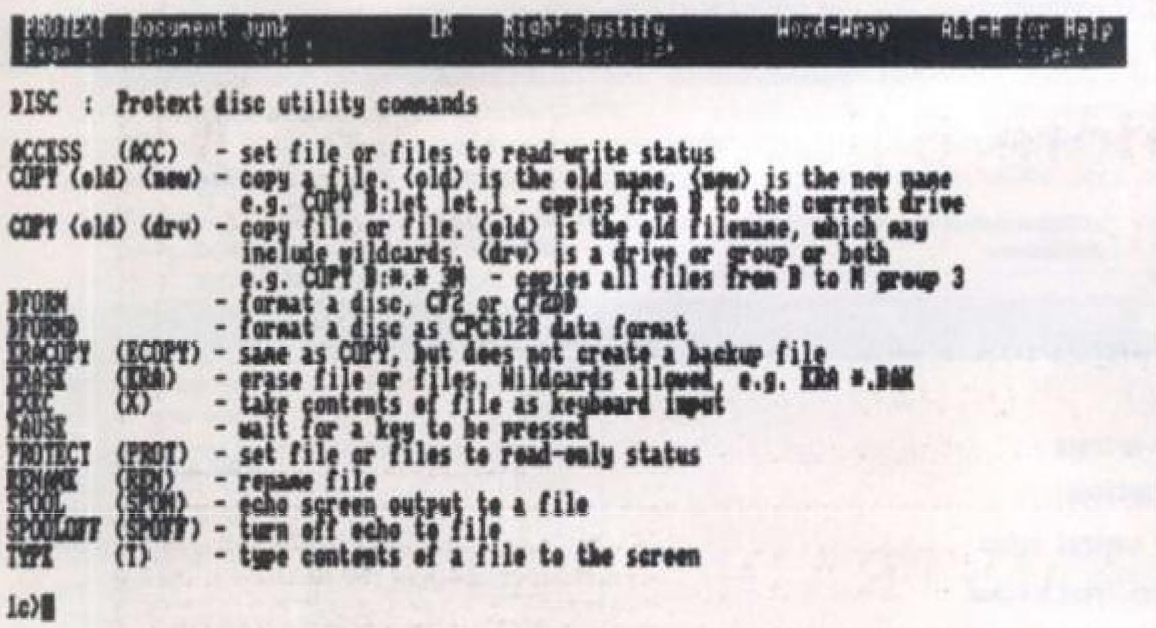
STOP to return to main menu

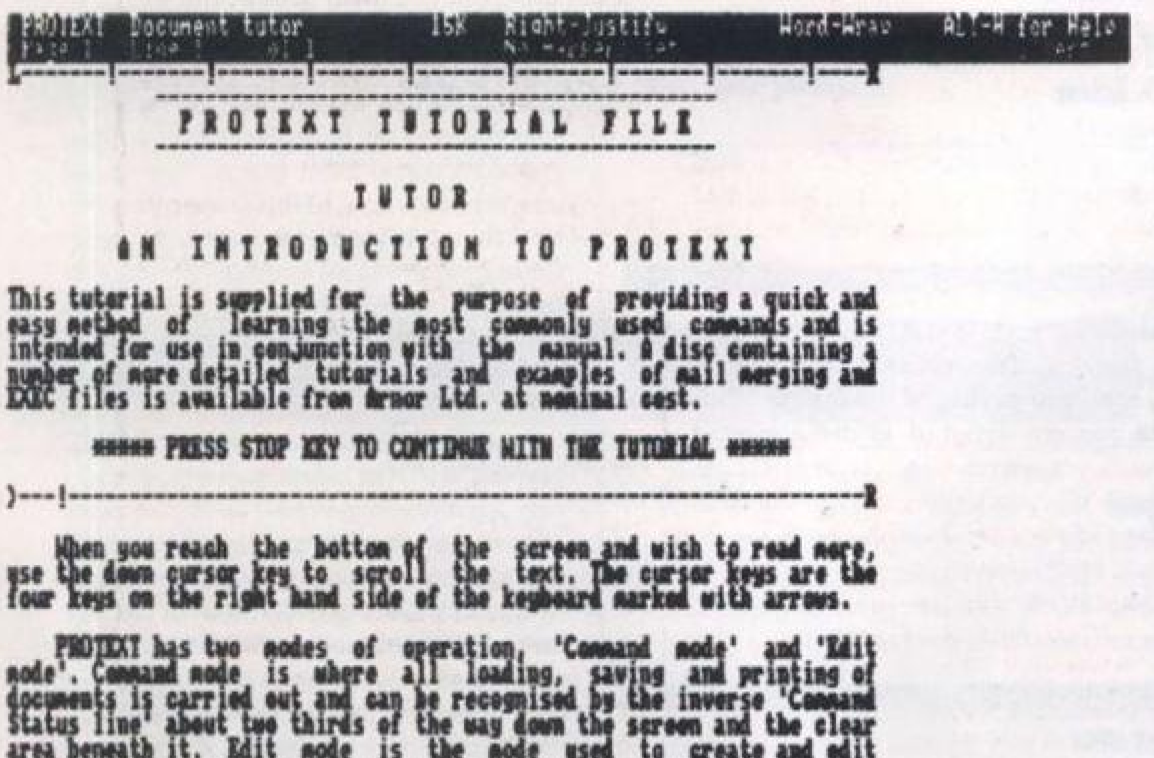
Select command:
```

Those features on their own would make Protext a very good package to buy but Arnor has also included a comprehensive mail-merger and spelling-checker. Mail-merging is the facility whereby a standard-form letter can be combined with a database to give personalised letters containing information specific to each individual.

Commercial packages range from the very simple – it will just about insert a name and address – to the unbelievably sophisticated, suitable only for large mail-order firms. Protext has found a very good balance so that a great deal of flexibility is available to the user if required. Stored commands in the master letter using, among others, IF/ELSE/ENDIF loops, decide whether certain paragraphs are to be printed, depending on the particular conditions specified.

Below: one of the full HELP screens. Note the very useful disk utilities. Bottom: part of the tutorial showing the full editing screen without on-screen help menus.





A tell-tale sign of mail-merging is the sight of large gaps in an individual copy, left to cater for very large names and addresses. To that end Protext has the >FP command, to force re-formatting at the printing stage. Thus the data is collected from the database – which can be from a variety of sources, including a file written in Protext – and then re-formatted to get rid of extraneous spaces and lines before the final commital to paper.

Mail-merging is either something you need desperately or find useless. Protext gives all the facilities most users will need – but spell-checking is always necessary. Protext will either check a document in memory or on disc and, assuming the former, two commands are available in the command mode. If a simple check is required, SPELL will cause the screen to clear and the checking to begin. Any word not found in the dictionary supplied on a disc is marked, ready for action. This can be:

change – you re-enter the word correctly
store – you store the new word in the dictionary
ignore – if the word is correct but you do not want it stored
look-up – if you are not sure of the spelling. The program will offer you likely alternatives.

For the full-feature system, you type SM to call up the main spell-check menu. It offers single-pass check, essentially the same as the foregoing, or two-pass, more convenient with large files, or when more than one dictionary is being used. A complete list of the unknown words is compiled first before any checking takes place. There are also facilities for controlling the drive and user group, as well as turning the printer on/off to list the unknown words.

Dictionary utilities are provided to find words, find anagrams, count words and build a dictionary. The last option is used to store specialised words, like medical terms, in a separate dictionary, to be called only as and when required.

It is a travesty to have to shrink the review of the spelling checker to just a few lines, because it is extremely powerful, but any word processor is bought and sold on the strength of its editing functions, not its spell-checking or mail-merging facilities.

Protext deserves to be the system by which all other word processors, particularly for the PCW, are judged. It has all the facilities expected of a fully-professional system – and not found in all of them – with the ease of control often found only in the simpler packages, and the speed hitherto undreamed of by any Locoscript user. Combined with the mail-merger and spelling-checker, Amor has given the market a superb product.

SOFT RELEASE

Firetrack
Commodore 64/128
£9.99 cassette, £14.99 disk
BBC B, Master
£9.99 cassette

Like most arcade games this one comes complete with a preposterous story line. It's something to do with Earth being threatened (again) and you task being to hit nuclear power plants to black out the 'Devil Rock' while finding the 'White Light'. Lot of nonsense, really.

That's a shame because the game itself is quite superb. I tested it on the BBC Micro and it has to be one of the finest games for that machine.

The basic design wins no awards for originality – you fly a spaceship across various land-



● Firetrack.

scapes, zapping ground features and either avoiding or wasting enemy ships.

It's the quality of the design that could win the awards. I particularly like the way holes appear in the planet as you fry the buildings on the surface. Through the holes and around the edges of the ground you see stars which move at a different rate from the land, giving a great sense of perspective.

The scenes are colourful and really fast. Who needs a story line when you can have this much fun creaming aliens? The game comes complete with a dreadful tune that serves to crank you up into maximum psychosis for the first attack, but it is worth turning it off after that.

There are four worlds to attack in all, and you can choose where you start using the function keys. The worlds really are different. I start on Iceworld where your attack is unopposed in the initial stages. You pile on the points burning up ground features, including a collection of question marks shaped into the number 42 – nice touch!

That can't go on forever. I usually manage to pick up a bonus, but then the enemy gets seriously miffed and sends down the heavies. That's why I can't tell you waht the final stages look like – I've never even come close.

I'm determined to try again, though. It's that kind of game. You end up buzzing, seeing aliens every time you close your eyes, hearing the tune in your sleep.

As well as the excellent graphics, the game has a few other thoughtful features. Sound effects and music can be turned on and off individually. And you have a choice of control keys.

There is a black and white option. And that's exactly what it does – turning the picture into black and white so that it shows up better on mono monitors.

As I said, the game was tested on a BBC micro, but it is likely that the Commodore version will be just as good. It might not make quite such an impression with Commodore owners, however. They're used to games having good graphics – Beeb owners aren't. It's about time they got something like this. Innovative it isn't, but Firetrack has all the right ingredients for a classic arcade zap game.

Roger Willcoe

Ravenskull (Superior Software)
BBC B, B+, Master and Electron
£9.95 cassette, £11.95 disk

This is a great arcade game for people who prefer adventures. The style is very much in the Repton vein, where you control a colourful little character whizzing madly around a maze. But you need a bit more than just speed with this game.

The action takes place in a castle. There are four levels, each containing a piece of a crucifix. Obviously you have to collect the pieces.

You can do this in one of four guises – an adventurer, a wizard, a warrior or an elf. The difference between them is mainly in the types of treasure you collect as you dash round. If you decide to be an elf (and why not?) then you'll be after bags of gold. Wizards collect crystal balls, warriors go for shields and adventurers are interested only in chests.

Naturally, being of an avaricious disposition, you are absolutely driven to collect all the treasure on each level. Once you've done that you can get the piece of crucifix and move to the next level.

Those aren't the only things lying around, however. You will also come across keys, axes, spades and dynamite. Some of the extra objects have predictable consequences – drinking wine, for example, reverses the controls, an experience we have all encountered at some time.

Many of the objects are lethal, some slow the game down, others speed it up and you can find yourself being teleported. It's this kind of bizzare occurence that make the game a natural for adventure fans.

As if the objects weren't bad enough, the castle itself has it



● Ravenskull.

in for you. Walls move, doors slam and there are spikes just waiting for you to fall on them. And to top it all, the castle is guarded by Ravenbees. You can probably work out for yourself how friendly they are.

The graphics are excellent. The picture scrolls smoothly in all directions, with each level being 64 times the size of the screen image.

As with an adventure you can call up an inventory of the objects you're carrying. This is done using a status screen. The objects are shown and can be examined, so it's here that you get to read scrolls.

The status screen also tells you how many lives you have left, your score and whether you have sound and music turned on – fortunately you can turn the tune off any time.

The characters themselves are quite cute. You view them from above and are treated to the sight of the character spinning like a top each time it dies. The point is then driven home, with all the subtlety of an air raid, by having the poor little chap replaced by a coffin.

This is a good game for buy-eyed speed freaks who get their kicks from fast-moving action. But there is a lot of experimenting to do, finding out what the objects are used for, the best routes to the treasure, and so on. That kind of logic will appeal to adventurers. It looks like another success for Superior.

Roger Willcoe

Companion (Digital Integration)
Amstrad PCW
£19.95

Where would Batman be without Robin? Where would Tom be without Jerry? Where would peaches be without cream and where would a computer buff be without a sidekick?

Unfortunately, if you own a PCW, the world-famous desktop utility package Sidekick is not available to you. Digital Integration has attempted to fill the gap with its latest release, Companion. The program's only competitor in this field at present is Write Hand Man from HiSoft. This differs from Companion in being a totally RAM-resident program – all the utilities are stored in the machine's internal memory leaving you free to run other programs, calling upon the desktop utilities whenever necessary. Write Hand Man has long been available as a stand-alone package and can now be bought with a specially configured Kempston Mouse, though I have yet to discover any benefit from this rather costly addition to what is a perfectly good piece of software as it stands.

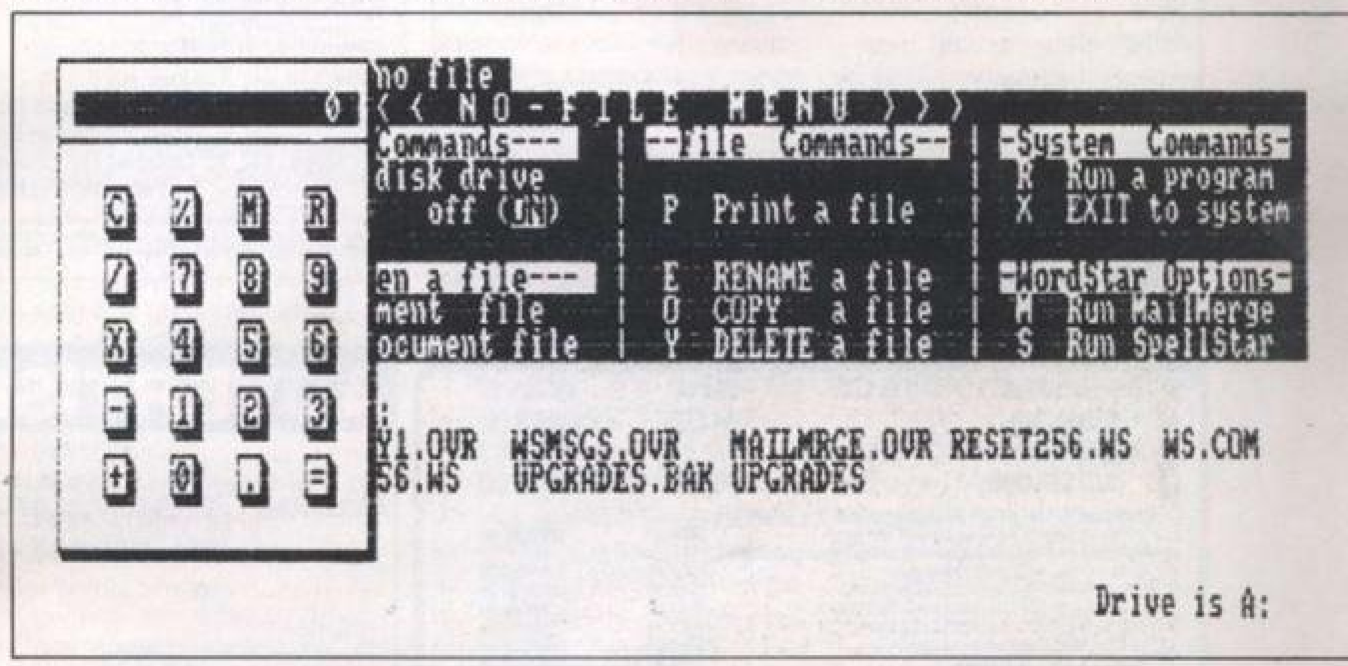
Both programs are menu driven. With Companion, holding down the EXTRA and P keys calls up the main menu while in the case of Write Hand Man, the menu appears on holding down ALT and [. The menu of Write Hand Man gives a choice of eight options which, in addition to the usual notepad, phonebook, calculator and calendar include routines to display the disk directory, contents of an ASCII file and redefine the keyboard. The program also features an ASCII character table, a hex calculator and utility to allow new programs to be loaded and run in the TPA.

Companion has two types of application, resident and non resident, both of which are displayed on the six-option main menu. The first of the resident functions is a calculator. This features the usual four functions and includes a memory. The second function is an on-screen clock. This is especially useful as no matter how much the screen scrolls, the clock remains stationary at the bottom left corner of the screen. Selecting the clock from the main menu calls up a sub-menu allowing the user to switch the clock on or off and to set the time. As the PCW has no batteries to keep the clock running when the machine is switched off the clock has to be re-set each time Companion is used.

The third item on the main menu and the last of the resident functions is simply called DOS. This part of the program can give you useful information about the condition of your disks and eliminates the need mto chop and change disks to use CP/M functions. The first of the three DOS functions allows you to determine the amount of free space on a disk – very useful. The second gives a directory of the files on the disk in a similar way to the CP/M DIR command. The final function – view file – can be used to display the contents of ASCII files.

The four remaining functions need to be loaded from disk before they can be used which is a great shame as it partially detracts from the principle of a desktop organiser. Such a program is supposed to prevent you having to scramble about searching for a scrap of paper to take a message or for new batteries for your calculator but Companion still leaves you with the problem of finding the program disk!

A notepad is the first of the disk-based functions. Up to 25 pages of information can be stored and this is stored on disk allowing you to recall the information at any time. The second non-resident function, the phone book, is divided into eight alphabetical sections, each of which can hold up to fifty names, addresses and telephone numbers. The phone book has two modes of operation. Edit mode allows you to search for an existing entry or to update an old one. The second mode enables you to add new entries.



● **The Companion pop-up calculator.**

The last two functions are combined into a diary and calendar. Attempting to enter notes into the diary is rather a lengthy process. You are first prompted to select the year required, then the month, then the day and then, after a further short delay, the relevant diary page will be displayed allowing you to enter notes for that day.

Desktop packages such as Companion and Write Hand Man, in addition to be useful to anyone who is fed up of scrambling about on a desk for notepad in the midst of that all important phone call, are also a great boon to programmers. No longer need you exit and save your program and load another to remind yourself which ASCII character is which. Instead, press a few buttons and all will be revealed.

From the programmer's point of view, Write Hand Man is a better program with many more advanced features. If however all you want is a handy calculator, notepad and calendar, Companion is just as good, although there is far more disk swapping involved when using the more advanced features.

The big problem with the PCW is that most user have become very accustomed to the LocoScript software supplied with the machine. This uses its own operating system and is unable to operate in conjunction with any other program. This means that if you truly want to use a desktop package, you will need to forsake LocoScript in favour of one of the many other CP/M based word processors for the PCW. The manufacturers claim that the program has been tested with the majority of CP/M based packages for the PCW and works with all of them. This is perfectly true providing you do not want to use Protext or Plan It or, for that matter, any other program which requires the memory drive to be empty before it will operate.

Anthony Thompson ▶

ADVERTISERS INDEX

▶ GBA Championship Basketball
Activision
Atari ST, Amiga,
Commodore 64
Price: £9.95 – £24.95

Many of you will not have played the original American basketball program, Dr J and Larry Bird go One-on-One, so any comparisons between the two are useless. Suffice to say that Two-on-Two is an updated version of the earlier product, only produced by Activision rather than Electronic Arts.

As its name would suggest, this version of basketball allows the player to control two basketball players, with either two players controlling one man each, and the computer controlling the opponents, or one player controlling one man, and the computer controlling all the rest.

The object of the game, once you have perfected the basic principles behind playing, is to enter your team into the league, and compete against five of the meanest teams in the US. Before any form of competition can take place, however, it is essential to get past the stage where you find the opponents 100 points in the lead after 20 seconds.

As most people will spend more time playing on their own, it is necessary to be able to anticipate what the computer intends to do. This may sound easy, but most of the time, the computer is about as *reliable* as a Sinclair launch date. After a few hours play, the best policy becomes obvious – pass the ball to the computer as quickly as possible and let him do the rest. If you are forced to take the lead (the computer passes back sometimes) then see how close you can get to the basket and then go for it.

If I make the game sound too difficult then I am perhaps being unfair. It is possible to keep up with some of the teams, and even to take the lead occuasionally, but in a week's solid play I never won. The only time I did establish a match winning lead was when helped by an able advertising bod, only for the game to be terminally halted by the telephone.

After each game, the screen shows the division, and who is and isn't doing well, although I found myself avoiding this section for fear of shattering news. Overall, this version of Basketball is very playable, neither the graphics nor sound are state of the art, but the game is both addictive and enjoyable. I onl wish that for once I could win!

Francis Jago

Supercycle
Atar ST, Commodore 64
Price £9.95 – £24.95
Epyx – U.S. Gold

Imagine the feeling, 750cc of raw power beneath you, over 120 bhp on tap (roughly the equivalent of a Golf GTI), and only two wheels to keep you on the road. This is what racers such as Wayne Gardner and Joey Dunlop have to live with as they scream round such treacherous tracks as the Isle of Man TT.

With Super Cycle for the Atari ST, Epyx has compromised realism for the sake of creating an enjoyable and arcade-like racing game. Indeed, anyone familiar with the arcades will immediately notice the obvious resemblance between Super Cycle and an arcade game Sega released last year called Hang On.

In many ways, Super Cycle is little more than a glorified Pole Position. The graphics are very similar, especially in the later desert stages, and playing the game also requires all the same skills. What makes the game so much more enjoyable than any other driving games on the ST is the simple fact that you are not driving a car, but racing a bike, and consequently the player often finds himself leaning in sympathy with the poor rider you are controlling.

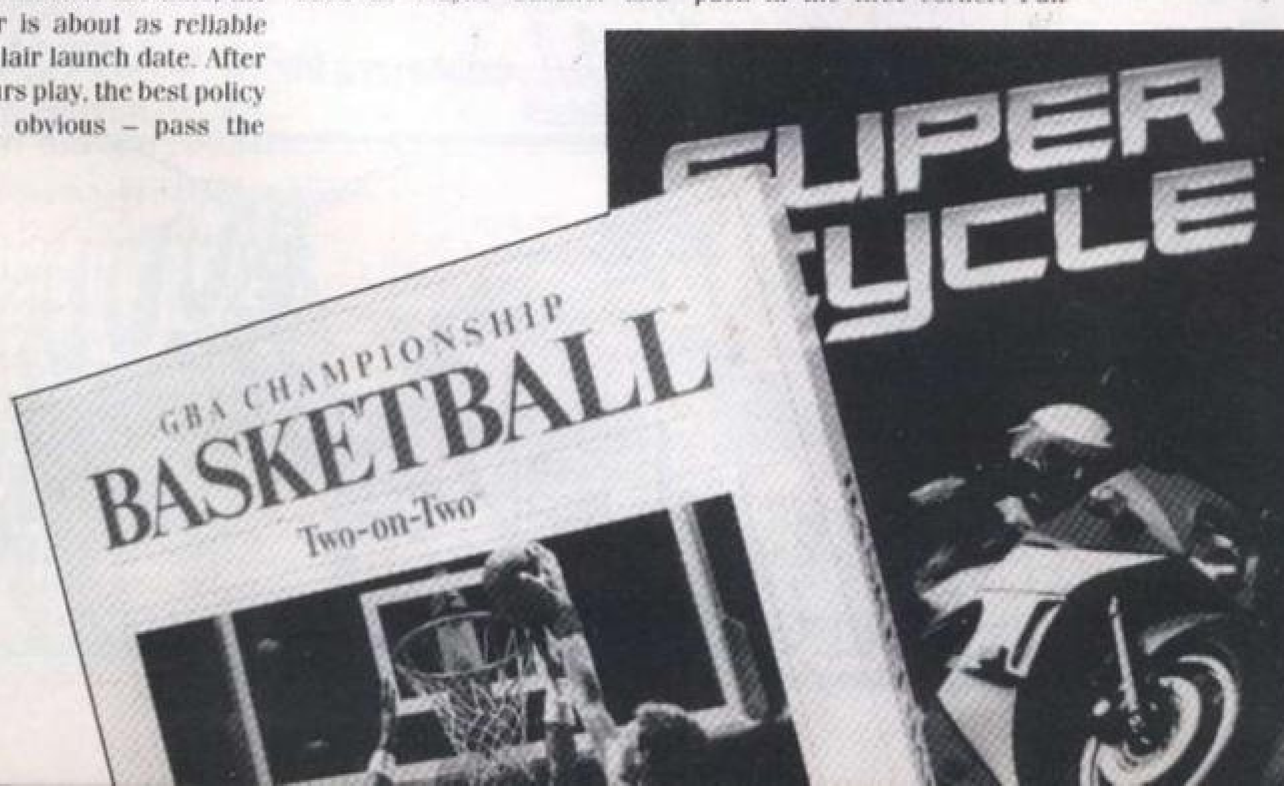
The game starts with the player choosing which colours their leathers will be, and then designing the colour scheme of the bike on which they will race. Once done, you take position on the grid, and prepare to rev the bike to 11,000 revs before even considering dropping the clutch. Amidst the screech of tyres and burning of rubber your're off, diving left and right to avoid getting caught in the pack in the first corner. Full revs in third, then slam on the anchors, click down to first (no one bothers with the clutch in this game) and make sure you are in the power band as you accelerate out of each bend.

To aid the player's judgement, Super Cycle has both a speedometer and a rev counter, and as you get used to the courses, you will begin to know which corner should be taken in what gear, and at what speed. After more than a few hours play, the game starts to become quite easy, due more than anything else to the fact that on level one, you can afford to crash, and yet still qualify for the next screen.

Level three is a different kettle of fish altogether. One big mistake, or two corners taken at slightly the wrong speed, and you are immediately confronted by the disconcerting sight of the rest of the field howling past. Perseverance, and a great deal of skill, will win the day, although later stages, where the track has no edges, and therefore even a little rear end slip cannot be allowed are still well beyond me.

Overall, Super Cycle is a really good fun game. It is about as intellectually demanding as Playschool, but then I sometimes watch Playschool, and I certainly enjoyed Super Cycle.

Francis Jago ▶



In its simplest form, a computer database merely mimics the operation of a traditional card based index file. Such a database will allow the user to configure record fields to meet his particular requirements and to enter data into these fields from another section of the program. While the scope of such systems is somewhat limited, where speed of access to specific items of data that are keyed by a limited number of fields is at a premium, they can offer a performance that is superior to more complex programs.

In contrast to this simple approach many current generation products make use of the processing power of the PC computer to provide the user with the means of interrogating and outputting data in a form that is more flexible than any card based system could hope to achieve. PC Promise, designed and developed by Surrey-based Duncan Databases, offers such a system.

The software is compatible with the Amstrad PC1512 range of hardware and any other system offering 100% IBM compatibility. Version 2.0 of PC or MS-DOS is required with a minimum memory requirement of 160K. Among the other machines on which PC Promise was used was a standard PC1512DD running under MS-DOS v3.2. The manual supplied with the software should allow even those with little PC experience to prepare a security backup copy of the distribution disk and from that to create a bootable version of the software by using the MS-DOS SYS command and copying across the COMMAND.COM file from the system disk. By adding an AUTO-EXEC.BAT file to the PC Promise applications disk, a turnkey system can be created, a point that will be of considerable advantage in circumstances in which the system is to be used by unskilled operators. Other aspects of the system, including the design of screens, the provision of user-created help screens and a pass-word protection system that can restrict access to the higher levels of the system, contribute to making PC Promise a program that can be configured for use by someone with a knowledge of the software yet safely be used by other operators whose task is only to put information on to the system.

An attractive feature of the program is a system that both minimises the amount of storage that data will require and eliminates the need to duplicate the entry of certain key details. To use the example quoted in the manual, a business with a large number of customers will need information from a master record containing name, address, credit rating and customer reference number, to be stored in several places. Delivery notes, invoices and mail shots are just some examples of tasks that would require data from the master record. By using an effective system of screen jumps and indexing, PC Promise allows data entered at various parts of the system to be available to other screens when required.

The manual includes full details of how a basic system comprising customer screen, product screen and invoice screen may simply be implemented. The invoicing screen demonstrates the way in which the basic mathematical functions of PC Promise can be used to calculate the total amount to be charged for products included on the screen and the content of VAT.

While PC Promise offers the ability to create powerful databases that are easy to use, unless the programmer of the system pays particular attention to the design of each screen within a system, and to the way in which screens interact, the resultant system will be far from satisfactory. The create screen option is the third selection from the Main Menu of the program, and is incidentally one of those functions that may be password protected. To create a new screen, the second option is selected from the screen painting menu. The blank screen that is now displayed is the area that will eventually form a data entry screen. Fields are simply created by entering the field name followed by a number of underscores corresponding to the required size of the field. The appearance of data entry screen may be enhanced greatly by a series of graphics drawing tools available via the function keys. While some many consider the design of a screen to be unimportant, there can be little doubt that a well laid out screen will contribute to reduction in the number of operator errors at the subsequent data entry stages.

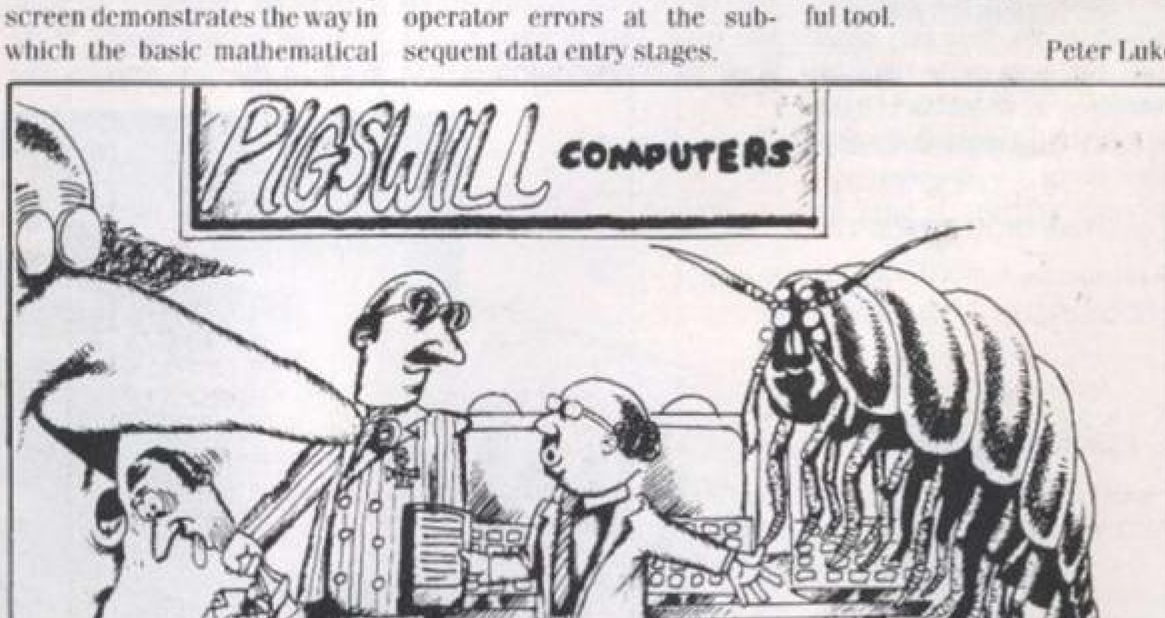
Having created a screen and made any amendments using a series of screen maintenance commands, PC Promise offers the useful facility of creating automatically a test file that can be used to check the operation of the system.

From basic screens produced in this way, users may specify screen jump commands that will link screens and so allow data to be interchanged between various elements of the system.

A further refinement to PC Promise is a function that allows data to be imported to the system from other application programs. The file exchange protocols supported include the comma delimited form offered by many application packages. The printing options supported by PC Promise also allow disk files to be created from the data within a file. These could in turn be used by other applications software such as a word processor.

PC Promise is a product in the Amstrad mould. It offers high performance at a low price. It scores highly in terms of ease of use and the ability to exchange data between sections of the program should be a valuable feature in many applications. For the novice computer user in business, the program should provide a useful tool.

Peter Luke



● We found the bug, sir . . .

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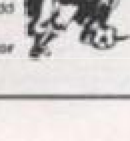
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Action Replay Mark Two cartridge also available from Datel Electronics.

MegaTransfer Disk V 4.0

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TECHNOLOGY SO ADVANCED ...



MEMORY
- 512Kbytes RAM (520ST-M, FM)
- 1024Kbytes RAM (1040ST-F)
- 192Kbytes ROM
- 128Kbytes external plug-in ROM option

ARCHITECTURE
- Motorola 68000 Central Processing Unit (CPU) with a clock speed of 8MHz
- 16-bit external data bus
- 32-bit internal data bus
- 24-bit address bus
- 8×32-bit data & address registers
- 7 levels of interrupts
- 56 instructions
- 14 addressing modes
- 5 data types
- DMA (Direct Memory Access)
- real time clock as standard

GRAPHICS
- full bit-mapped display
- palette of 512 colours

Using Atari Monitors (on 520 & 1040):
- 640×400 high resolution - monochrome
- 640×200 medium resolution - 4 colours
- 320×200 low resolution - 16 colours
- 80 column text display (40 col low res)

Using Domestic TV (on 520):
- 640×200 medium resolution - 4 colours
- 320×200 low resolution - 16 colours
- 40 columns × 25 line text display

SOUND AND MUSIC
- 3 programmable sound channels
- frequency programmable 30Hz - 125KHz
- programmable volume
- wave & dynamic envelope shaping
- programmable attack, decay, sustain, release
- Musical Instrument Digital Interface (MIDI)
- MIDI allows connection of synthesisers etc

STANDARD SOFTWARE
- GEM desktop + TOS operating system
- ST BASIC interpreter/language system

MOUSE
- high precision
- 2 button control
- free with 520ST-FM/1040ST-F
- non slip ball motion sensor
- removable ball for easy cleaning

INPUT/OUTPUT

MIDI out	(5 pin DIN) 31.25K baud
MIDI in	(5 pin DIN) 31.25K baud
audio out	1.0V DC peak to peak, 10K ohm
audio in	1.0V DC peak to peak, 10K ohm
RGB monitor	1.0V DC, 75 ohm
mono monitor	1.0V DC, 75 ohm
mono horizontal scan rate	35.7KHz
mono vertical scan rate	71.2KHz
sync	5V DC (active low) 3.3K ohm
modem/serial	RS232C, 50 to 19,200 baud
floppy disk	250 Kbits/s
hard disk	11.3 Mbits/s
mouse	standard Atari connector
joystick	standard Atari connector
cartridge port	128K capacity
RF output (520ST-FM)	for TV use

OPERATING SYSTEM
- TOS with GEM environment in ROM
- hierarchical file structure with sub-directories and path names
- user interface via GEM, with self explanatory command functions
- multiple windows + icons
- window resizing, re-positioning and erasing
- drop down menus (selected by mouse)
- GEM virtual device interface

COMMUNICATIONS
- RS-232C serial modem port
- 8-bit parallel printer port
- MIDI port (also for networking use)
- VT52 terminal emulation

KEYBOARD
- standard QWERTY typewriter format
- 95 full stroke keys
- 10 function keys
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- variable auto-repeat & key click response
- keyboard processor reduces CPU overhead

... IT'S AFFORDABLE

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When you purchase any Atari ST keyboard, you will not only receive the best value for money computer on the market, but you will also receive the following from Atari Corporation as part of the package:

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In addition, we at Silica would like to see you get off to a flying start with your new computer, so we have put together a special **ST STARTER KIT** worth over £100, which we are giving away **FREE OF CHARGE** with every ST computer purchased at our normal retail prices. This kit is available **ONLY FROM SILICA** and is aimed at providing users with a valuable introduction to the world of computing. We are continually upgrading the ST Starter Kit, which contains public domain and other licensed software, as well as books, magazines and accessories all relevant to ST computing. Return the coupon below for full details.

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At Silica Shop, we have a dedicated service department of five full time Atari trained technical staff. This team is totally dedicated to servicing Atari computer products. Their accumulated knowledge, skill and experience makes them second to none in their field. You can be sure that any work carried out by them is of the highest standard. A standard of servicing which we believe you will find **ONLY FROM SILICA**. In addition to providing full servicing facilities for Atari ST computers (both in and out of warranty), our team is also able to offer memory and modulator upgrades to ST computers.

1Mb RAM UPGRADE: Our upgrade on the standard Atari 520ST-M or 520ST-FM keyboard will increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at an additional retail price of only £86.96 (+VAT = £100).

TV MODULATOR UPGRADE: Silica can upgrade the 1040ST-F to include a TV modulator so that you can then use it with your TV set. This is an internal upgrade and does not involve any untidy external boxes. A cable to connect your ST to any domestic TV is included in the price of the upgrade which is only £49 (inc VAT). The upgrade is also available for early 520ST computers at the same price.

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We aim to keep stocks of all Atari related products and our warehouse carries a stock of £½ million. We import many software titles direct from the USA and you will find that we have new releases in advance of many of our competitors. Unlike dealers who may only stock selected titles, we have the full range. In addition, we carry a complete line of all books which have been written about the Atari ST. A range as wide as ours is something you will find is available **ONLY FROM SILICA**.

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520ST-M

The affordability of Atari computers is reflected in the price of the 520ST-M keyboard, which is a mere £259 (inc VAT). This version of the ST comes with 512K RAM, as well as a modulator and lead for direct connection to any domestic TV. The price does not include a mouse. In addition, when you buy your 520ST-M from Silica, you will also receive the FREE Silica 'ST Starter Kit'. During 1987, many software houses will be producing games software on ROM cartridges, which will plug directly into the cartridge slot on the 520ST-M keyboard, giving instant loading without the expense of purchasing a disk drive. With the enormous power of the ST, you can expect some excellent titles to be produced, making this the ultimate games machine! If your requirement is for a terminal, then the 520ST-M can fulfil this role too. Leads are available to connect the ST to a variety of monitors, and with the imminent introduction of terminal software on ROM cartridge, the ST provides a low price terminal for business use. If you wish to take advantage of the massive range of disk software available for the ST range, you will need to purchase a disk drive. Atari have two floppy disk drives available, a ½ Mbyte model £149 and a 1Mbyte model £199. Full details of these drives, as well as the Atari 20Mbyte hard disk are available on request. If required at a later date, the mouse may be purchased separately.

£259

520ST-FM

The 520ST-FM with 512K RAM and free mouse, represents a further breakthrough by Atari Corporation in the world of high power, low cost personal computing. This model is the latest addition to the ST family, and is not only powerful, but compact. It is priced at only £399 (inc VAT) a level which brings it within the reach of a whole new generation of computer enthusiasts. When purchased from us, it comes with the FREE Silica 'ST Starter Kit' see paragraph on the left. To make the 520ST-FM ready for use straight away, Atari have built into the keyboard a ½ megabyte disk drive for information storage and retrieval, allowing you easy access to the massive range of disk based software which is available for the ST. This new computer comes with all the correct cables and connections you will need to plug it straight into any standard domestic television set. You do not therefore have to purchase an Atari monitor. If you do require a monitor however, these are available with the 520ST in the following money saving packages:

520ST-FM Keyboard	*Without Monitor*	- **£399** (inc VAT)
520ST-FM Keyboard	*+ High res mono monitor*	- **£499** (inc VAT)
520ST-FM Keyboard	*+ Low res colour monitor*	- **£599** (inc VAT)
520ST-FM Keyboard	*+ Med res colour monitor*	- **£699** (inc VAT)

Because the 520ST-FM has its own power transformer built into the keyboard, there are no messy external adaptors to clutter up your desk space. You are left with only one mains lead, serving both the disk drive and the computer. You couldn't ask for a more stylish and compact unit.

£399

1040ST-F

For the businessman and the more serious home user, Atari have their most powerful model, the 1040ST-F with 1024K RAM. This low cost powerhouse can be introduced into a business environment as a stand-alone system, or can support a mainframe computer as a terminal. The 1040ST-F not only features twice as much memory as the 520ST-FM, but also includes a more powerful built-in disk drive. The drive featured on the 1040ST-F is a one megabyte double sided model. The extra memory facility of the 1040ST-F makes it ideal for applications such as large databases or spreadsheets. Like the 520ST-FM, the 1040ST-F has a mains transformer built into the console to give a compact and stylish unit with only one mains lead. The 1040ST-F is also supplied from Silica Shop with a free software package and 'ST STARTER KIT'. In the USA, the 1040ST-F has been sold with a TV modulator like the 520ST-FM. However, for the UK market, Atari are manufacturing the 1040ST-F solely with business use in mind and it does not currently include an RF modulator, this means that you cannot use it with a domestic TV (Silica Shop do offer a modulator upgrade for only £49). The 1040ST-F keyboard costs only £599 (inc VAT) and, unless a modulator upgrade is fitted, will require an Atari or third party monitor. There are three Atari monitors available and the prices for the 1040 with these monitors are as follows:

1040ST-F Keyboard	*Without Monitor*	- **£599** (inc VAT)
1040ST-F Keyboard	*+ High res mono monitor*	- **£699** (inc VAT)
1040ST-F Keyboard	*+ Low res col monitor*	- **£799** (inc VAT)
1040ST-F Keyboard	*+ Med res col monitor*	- **£899** (inc VAT)

The 1040ST-F comes with a mouse controller and includes 1Mbyte of RAM. It has a 1Mbyte double sided disk drive and mains transformer, both built into the keyboard to give a compact and stylish unit, with only one mains lead.

£599

ATARI ST

To: Silica Shop Ltd, Dept YC 0487, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

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You are invited to join the Murder Club, but be careful you could end up. KILLED UNTIL DEAD



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"Each member of The Murder Club will try to bump off the others and lay down claim to the crown of 'World's Greatest Murderer'. But it will not be a piece of quiche! For these brilliant criminal minds must match wits with moi, Hercule Holmes! I have only until midnight to discover the would-be murderer, victim, murder weapon and the scene of the crime."

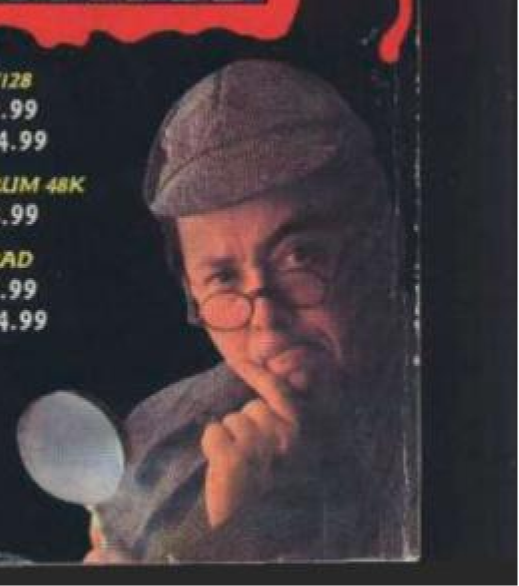
"At my disposal will be every imaginable piece of high tech crimestopping gadgetry known to sleuthdom: minicameras, hidden bugs, even wire taps. Yet all these modern electronic wonders cannot replace my inherent ability as a born detective... instincts passed from generation to generation in the Holmes family.

Therefore, I accept the challenge. I will uphold the family honour! Before this night is over I will prevent a murder or be murdered trying! If I fail, one of the illustrious members of the Murder Club will surely be killed... yes Killed Until Dead!"

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